

HP Professional

DECEMBER 1998

HP-UX

♦
Windows NT

♦
MPE/iX

A BCI PUBLICATION

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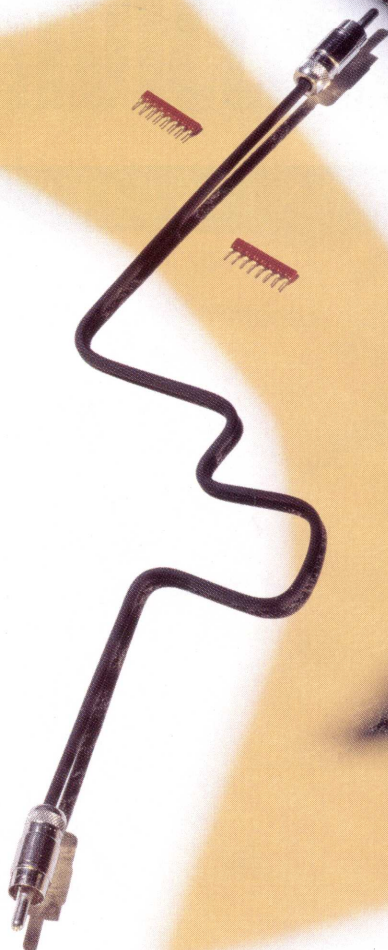
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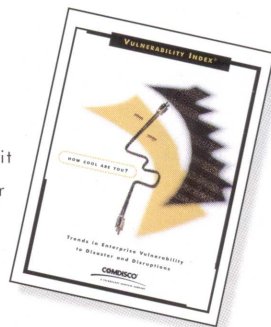
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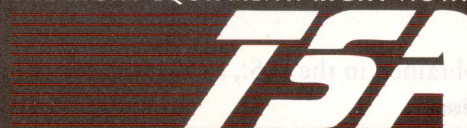
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The Weight Of Time

This month's cover says it all. While many vendors are posturing about 21st century solutions, we're squarely focused on what's going to happen next week or next month or even in the next minute. That is, we're taking a look at the issues surrounding Business Continuity, High-Availability and Disaster Recovery. No matter what you call it, the goal is keeping your business alive when the (pardon the pun) chips are down.

Business Continuity, High-Availability and Disaster Recovery is like insurance. You buy as much, perhaps more, than you think you need. And in the event of an act of God or the unnatural acts of mankind, you're covered. If you're extremely lucky, you'll never have a cause to cash in. Take note, however. The days of rolling in some extra hardware and storage boxes to cover your downtime — unplanned or planned — are history; which is what you'll be if you don't start thinking about uptime. If e-commerce is in your future or already in your present, then you know that maximum uptime provides more opportunities to make an e-buck. And, if you think that the e-buck only stops there, then guess again. What if your ERP solution decides to go on an unscheduled strike? If your systems go down, so does your business.

FACTS OF THE MATTER

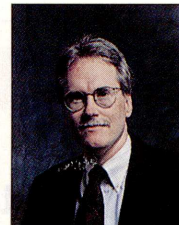
You want facts? Try these: According to SunGard Recovery Services, Inc., a disaster recovery firm in Philadelphia, Pa., the average revenue impact for a system shutdown (for large sites) was \$96,000. In a SunGard/EMC survey of a group (60 percent of which were Fortune 1000 companies), 82 percent had a recovery window of less than 24 hours. Or take the practical case of NYCE, a New York firm specializing in ATM and Point-of-Sale (POS) processing and remote banking services. Their mission of continuous availability states that cardholder transactions at any NYCE terminal will be serviced 100 percent of the time, 24 hours a day, 365 days a year. And that's sanctioned by their Board of Directors.

Now you might think that this month's feature about HP's role as the infrastructure supplier in the 1998 World Cup doesn't have much to do with uptime. But do you recall any "technology failure" stories in the news like those that IBM had to endure during the 1996 Olympics? Exactly.

UPWARD MOBILITY

Our other business continuity stories this month include a look at Uninterruptible Power Supplies. There's also an article about high-end business recovery solutions. And a look at what HP is doing in the security space. Next year, as we count down towards 2000 — perhaps the ultimate IT disaster story — you can expect more from us on HP's efforts to provide 99.95 and 99.999 percent uptime on both HP 9000/HP-UX and NetServer systems. If you don't know, 99.999 equates to only about 5 minutes of downtime a year. It's no easy task. That's why you can expect 5nines:5minutes, as HP calls it, to happen closer to the Year 2000. HP's taking a holistic bottom-to-top approach working with Cisco, EMC, Oracle and others.

That said, I hope you'll consider this issue our Christmas present to all the CIOs, IT managers and administrators out there that comprise the majority of our 30,000 plus reading audience. Now that the Y2K Problem has gotten your attention, there's no time like the present to begin with a fresh approach to business continuity.



George A. Thompson
thompsonga@hpro.com

HP NEWS & VIEWS

A T P R E S S

HP's New Standard For Data Centers

In a recent live international broadcast from Studio 8H in Rockefeller Center where the Saturday Night Live cast broke through barriers in late night comedy, HP announced it's "Breaking Data Center Barriers" in high-end UNIX with the HP 9000 V2500 server.

The new V2500, capable of 100,000 transactions per minute, uses the PA-8500 CPU and under the umbrella of the also newly announced Scalable Computing Architecture (SCA), will be able to scale up to a 128 processor configuration in a single HP-UX 11 image. Being presented as ideal for scientific, engineering and data warehousing applications, it has delivered more than 55 gigaflops in a 64-way configuration of a Linpack NxN application and in a 32-way configuration, more than 7,249 SPECint rate 95.

Additionally, HP announced enhancements to MC/ServiceGuard, which has added the ability to form a 16-node HP-UX 11 cluster environment for a total of 2,048 PA-8500 CPUs and the combination of its OpenWarehouse program with HP Consulting and partner products to offer an ERP Business-Intelligence program targeted at quick data warehouse implementations for finance, telecommunications and ERP environments.

The V2500 will be available in January. HP-UX with 128-way scalability will be available in mid-1999.

HP Reports Fourth Quarter Earnings

HP reported net earnings for the fourth quarter, which ended Oct. 31, of \$710 million, or 68 cents per share. That is a decline of 12 percent compared with reported net earnings of \$806 million, or 75 cents per share, in last year's fourth quarter. Special charges of approximately \$170 million, taken for voluntary-severance programs and fixed-asset writedowns, reduced net earnings per share from 79 cents.

Net revenue for the quarter increased 4 percent to \$12.2 billion, compared with \$11.8 billion in last year's fourth quarter, when revenue rose 16 percent. Net revenue in the United States was \$5.7 billion, an increase of 4 percent, compared with the year-ago quarter, while revenue from outside the United States also rose 4 percent and totaled \$6.5 billion, or 53 percent of the company's total this quarter.

trators, it's to help them focus on the critical services they need to pay the most attention to. "AQS will deliver specific value for each customer," he says.

Assem points to some telling statistics that show the effect application outages can have. A 1998 IDC survey showed that the average application outage per week accounted for 4.34 hours, the average cost per hour of outage was \$63,830 and the annual revenue loss from application outages was \$14,400,000.

Assem described several upcoming AQS products that HP hopes will turn those statistics around. First is the AQS workbench and development kit that allows developers to create a response time management tool that conforms to Application Response Measurement (ARM) 2.0 standards for their custom applications.

In addition, Assem described "tightly integrated vertical solutions for specific applications," that AQS will offer in the first half of 1999, as "non-invasive" packaged ARM-based plug-ins for application such as SAP R/3 followed by Oracle, Microsoft Exchange and Peoplesoft.

These smart plug-ins will define service level agreements (SLA) for specific applications that integrate into OpenView ServiceNavigator.

OPENVIEW ADDS APPLICATION QUALITY

At last month's OpenView Channels Conference in Boston, Mass., HP expanded OpenView's application and server management capabilities by announcing its Application Quality of Service (AQS) strategy. AQS will provide IT man-

agers with increased control in meeting line-of-business users' requirements for responsive and available business-critical applications.

According to Magdi Assem, HP's product marketing manager for AQS, the new strategy is

designed to meet the needs of three distinct groups.

For users, the goal is response time management to ensure quick and continuous access to applications. For business management, it's to guarantee sufficient return on investment. And for IT adminis-



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How Fit Is Your Backup?

If you work in a small company, how well do you understand your information protection needs? Are you comfortable that, in the event of a crash, your backup environment is sufficient to get you back up and running? Would you like help assessing your current level of risk and suggestions on a solution tailored to your environment?

You might want to take HP's Small Business Fitness Test. The Web-based exam takes participants through a seven-step questionnaire that profiles their business, asks them to rate the criticality of their information and say what steps are currently taken to safeguard that information.

The test then recommends backup and recovery technologies and strategies appropriate to the participant's specific computing environment that will improve their chances of surviving a data-destroying event.

The exam is accessible by pressing the button for the Small Business Fitness Test at www.hp.com/go/tape.

Virtually British

Luxury car manufacturer, Jaguar, has purchased more than \$8 million in UNIX workstations and servers from HP to run Jaguar's C3P — a new computer aided design (CAD) software suite for next-generation car design. Using virtual prototyping technology for better visualization of CAD geometry (predominantly solids) and HP workstations, Jaguar expects to perform better predictive engineering and crash simulations before building physical prototypes and realize significant cost reductions.

Jaguar says that its C3P program represents a major expansion of the design and development program at its engineering center in Whitley, Coventry, England. The most recent HP systems procurement consists of 250 HP VISUALIZE

ServiceNavigator is based on the new IT/Operations JAVA user interface. It offers an overall view of the IT environment and allows operators to analyze an event in terms of impact on the overall business service provided, rather than on individual elements. This, in turn, will react to those pre-defined SLA parameters and launch the necessary notification actions.

OpenView Service-Reporter works with IT/Operations 5.0 to provide automated generation of integrated service availability and performance reports.

In initial review, IDC has determined that HP OpenView AQS can reduce the average application downtime hours by 70 percent, the percentage of users affected by 34 percent and the annual revenue cost by 78 percent.

"[AQS] will be the significant differentiator for OpenView," says Assem. "It's not found anywhere in the marketplace today."

HP also announced at the conference that OpenView's PerfView performance and resource management tool now supports Sun Solaris. Available in January, 1999, it will sell for \$8,000.

url:

www.openview.hp.com

PRAESIDIUM ADDS TWO

HP announced at last month's Computer Security Conference and Exhibition in Chicago, Ill. two new additions to its Praesidium series of Web security products. As a framework, HP is defining the "virtual corporation" concept as a means of sharing business processes both within an organization and outside the corporation with trusted business partners across extranets and virtual private networks.

VirtualVault and Authorization Server are

Praesidium products already in place that offer Web transaction security and the ability to manage trusted relationships across the Internet. Now, HP has added the Aventail VPN and the Raptor's Firewall.

The Aventail VPN secures communications between third-party users and a company's internal network with user-based authentication and encryption of information sent over the Internet. It is client-server software based on the IETF-standard Secure Sockets Layers

(SSL) and SOCKS v5 protocols.

One important point that factored in HP's inclusion of Aventail is its ability to integrate into an existing infrastructure. Because it supports any IP-based application, it will work with Java- and CORBA-based software, many legacy host, mainframe and custom corporate client-server applications.

The other new addition to Praesidium is the Raptor firewall from Axent Technologies, Inc. (Rockville, Md.). HP is reselling Raptor as its exclusive, software-based firewall offering. It is available for HP-UX, Windows NT and Sun Solaris platforms.

HP envisions Raptor as the perfect complement to VirtualVault to sit at the boundary of the Internet. VirtualVault allows safe access to internal applications and databases for external users which, according to the announcement, when combined with Raptor "creates a highly secure perimeter that can be configured to offer the performance and scalability" for e-business environments.

url: www.hp.com/security

Oracle/HP-UX Team on Internet Application Hosting

Oracle's getting into the business of Internet application-hosting for enterprise business applications on a subscription basis and HP-UX is their platform of choice. Dubbed the Business OnLine Pilot Program, Oracle will provide businesses of all sizes the full range of Oracle applications, including financial, distribution, manufacturing, front-office and human resources on HP high-availability systems.

Subscribers need only a Java-compliant Web browser and a network connection to access their "virtual data center." HP is providing not only the servers at the center, but also an integrated backup solution and a suite of OpenView Management tools that includes Network Node Manager, PerfView, IT/Operations and GlancePlus for system and performance monitoring.

ONE STOP WEB SHOP

In an effort to help customers speed their businesses on to the Web, HP is teaming with EDS and Cisco to provide a single source method for clients to establish an e-commerce site. The collaboration will focus on helping clients realize timesavings and reduced start-up costs in creating business-to-business and business-to-consumer applications.

The one stop shopping approach will feature EDS' consulting and systems integration capabilities, Internet networking products from Cisco and HP servers and security. The three will also deploy a global solutions center to enable joint testing and integration of proposed e-business service offerings.

For business-to-business applications, EDS' Web Commerce Services can

already offer its industrial products distribution feature which has a proven track record in enabling distributors to efficiently process new orders while decreasing turn-around time and its procurement application for the use of Web-based product catalogs.

Initial business-to-consumer applications include

Internet retail banking and bill presentment, an electronic storefront for sporting and entertainment events to sell tickets and merchandise, the employee store as a means of allowing employees to purchase discounted goods through a corporate intranet and customized services such as EDI, real-time inventory control and credit-card authorization.

url: www.ecom.hp.com;
www.eds.com/eb

Linux On Fire

Recognizing the growing interest in the Linux operating system, HP announced that Firehunter, its family of Internet service-management solutions for ISPs, now supports the Linux OS from Red Hat Software, Inc. (Research Triangle, N.C.).

The Red Hat Linux is an advanced, multiuser, multitasking operating system that runs on a variety of platforms. Linux is realizing a growing popularity among ISPs because the OS and its source code can be downloaded free-of-charge from the Internet. It can be used interchangeably as a server and high-end desktop platform.

ROADMAP TO MULTIGIGABIT

HP and Seagate Technology, Inc. (Scotts Valley, Calif.) have announced development plans to deliver products based on 2Gb/s Fibre Channel technology, with a roadmap leading to 4Gb/s and higher. The pairing of technologies is aimed at addressing the needs of computer system OEMs to build arbitrated loops with higher bandwidth and to build topologies capable of cascading several 1Gb/s loops together via high-speed switches interconnected by multigigabit links.

HP and Seagate are betting that the demand for increased bandwidth will keep pace with the increas-

ing data rates of new high-performance disk drives, such as Seagates 10,000-rpm Cheetah drives. The realization of the advanced speeds will be made possible because of HP's success with transceivers and fibre channel protocol controllers married with Seagates high-performance Fibre Channel hard drives.

The maximum bandwidth potential of a 2Gb/s link is 800Mb/s when its full duplex capability is used in combination with dual-port Fibre Channel disk drives, or twice the potential of a 1Gb/s link.

urls: www.seagate.com;
www.hp.com/go/fibrechannel

PHONING IN SUPPORT

HP has announced its Telecom Critical Support service, the first mission-critical support service designed specifically for the telecommunications industry.

Designed to ensure the highest levels of availability, the service includes: proactive service processes to reduce common causes of downtime such as operator error as well as customer monitoring; immediate access to an assigned team of dedicated HP telecommunications experts; four-hour call-to-restoration commitment; dedicated fully stocked on-site inventory of spare parts; and the Telecom Support Center to provide diagnosis and restoration.

Model C240 workstations. Jaguar has also adopted HP server technology to support its design program, for which it is using a K-Class server with EMC RAID for its CAE file server; and an S-Class and two V-Class servers for crash analysis.

url: www.hp.com/go/technical

HP 9000 Tops In OLTP

The HP 9000 V2200 Enterprise Server running Oracle8 Enterprise Database Server 8.1.5 delivered 40,794 transactions per minute-C (tpmC) performance at a price/performance of \$104/tpmC to achieve best results to-date for a single-instance Oracle database. Other tested servers included the Sun Ultra Enterprise 6000 which scored 31,147 tpmC at \$109/tpmC and the IBM RS/6000 Enterprise Server which came in at 34,139 tpmC at \$89/tpmC.

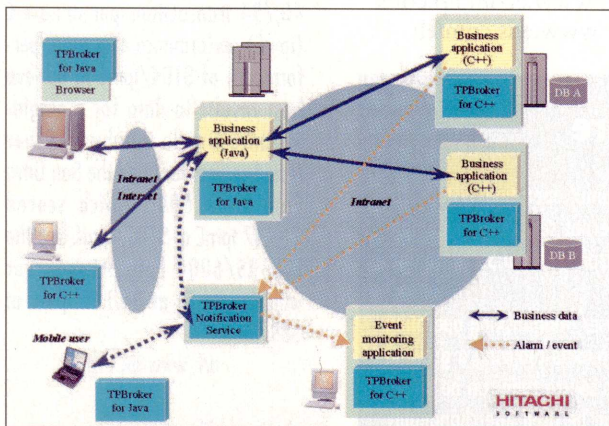
url: www.tpc.org

NetServer First

HP's new NetServer LXr 8000 system is the first single-node Intel-based server running Microsoft Windows NT Server, Enterprise Edition 4.0 and Microsoft SQL Server, Enterprise Edition 7.0, to break 20,000 transactions per minute (tpmC), using the TPC-C benchmarks. The HP NetServer LXr 8000 with SQL Server 7.0 achieved a result of 20,224 tpmC at a cost per tpmC of \$30.54.

And, the HP NetServer LXr 8000 system offers a 99.9 percent uptime commitment with HP's Mission Critical Server Suite for Windows NT. If that's not enough, availability is further enhanced with HP OpenView/ManageX for monitoring of SQL Server environments in the Application Server and HP TopTools, included with every HP NetServer system.

Break Even With TP Broker



TPBROKER 3.1

- Middleware-based CORBA and OTS 1.1-compliant transaction manager.
- Used to develop three-tier OLTP applications.
- Available on Windows NT; Solaris, HP-UX and AIX in first quarter, 1999.
- Developer's license starts at \$3,495 per developer's seat; Runtime module starts at \$3,345 per processor, per server.

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AdLink

Hitachi, Ltd. has been in the business of transaction processing for 25 years. Having sold over 3,000 of its Open TP1 server licenses in Japan, TPBroker 3.1 is a re-implementation of that product from a procedural model to an object model.

TPBroker allows for the gradual migration of applications into three-tier models while preserving co-existence with legacy applications. In addition to supporting C++ clients and servers, it supports Sun's Java Transaction Service (JTS), allowing developers to write transactional client-server applications in Java.

It also provides Object Transaction Service (OTS 1.1) functionality including standard interface compliant IDLs, indirect/direct transaction context management

and implicit and explicit transaction propagation in both C++ and Java environments. By supporting X/Open XA interfaces, TPBroker also provides connectivity to commercial databases such as Oracle, MS SQL Server and Informix.

"Hitachi's strategy is much different from most middleware vendors," says Jack Bissell, Hitachi's chief scientist for distributed object products. "We want to minimize a programmer's efforts to link two applications together and cut down life cycle cost."

One feature that helps, says Bissell, is TPBroker's Notification Service, which is designed to transmit structured CORBA event data at any given time from a CORBA application object, then issue the information to one or more CORBA object users wanting the information.

Each application/user can request only the information important to them by specifying filterable, pre-defined conditions, including prioritization and aging criteria. When the information is transmitted, the supplier "pushes" the information to the notification channel.

Tom Rohner, development manager for distributed objects at Tandem

Computers, Inc. (Santa Clara, Calif.), a division of Compaq, says his staff is often asked to recommend transaction-processing middleware for Windows NT and UNIX. After a "heterogeneous benchmark" performed at Tandem, Rohner now recommends TPBroker.

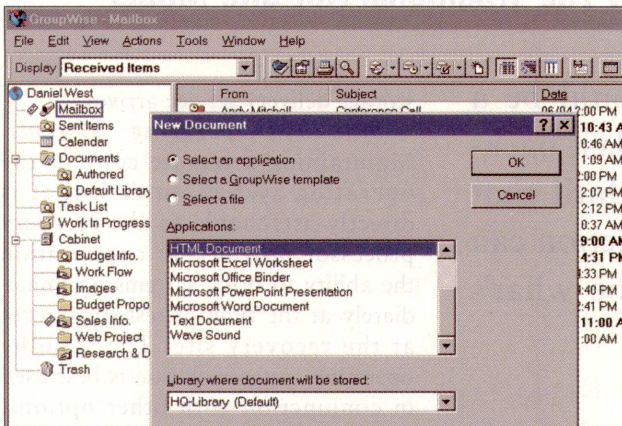
He cites TPBroker's compiler flags that make handling of complex data types easier for programmers. "Customers can be more efficient interoperating across platforms," he says.

Getting started with minimal effort was a main focus for Rohner. "Once the pieces are connected, it works right out of the box," he says. "It has a high degree of seamless interoperability and a high degree of portability of source code."

Asked for what he might like to see added in a future release, Rohner commented, "I'll be happy when they get Portable Object Adapter (POA) integrated." Client-side code is truly portable now, he explains, while server-side code is less so. The inclusion of POA will make them equal.

*Ken Deats,
Associate Editor*

Message Wise With GroupWise



GROUPWISE 5.5

- Internet-ready messaging and collaboration tool for corporate networks and intranets.
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AdLink

With an installed base of over 13 million seats, Novell's GroupWise has long been one of the most popular messaging foundation applications.

The newly released GroupWise 5.5 brings several new features. First, is expanded document management and inter-company collaboration. Tom Rhoton, Novell's director of product marketing, touts features such as related fields in which users can make entries in a particular field dependent on another entry in a related field.

He also highlighted GroupWise's document echoing which automatically keeps a local copy of a document in synch with the copy in a document library. "That feature enhances laptop and mobile needs," he

says.

Another new feature is enhanced calendaring which provides a "multiuser view of calendars," says Rhoton and a drag-and-drop feature that allows for the automatic scheduling of an event on multiple calendars.

Allegro (Dayton, Oh.) is an Internet messaging service company that provides e-mail message management solutions for GroupWise, Lotus cc:Mail and Notes and Microsoft Mail and Exchange clients.

Their GroupWise installation of 3,500 post offices handles 3.5 million messages per month and is one of the largest in the country. "We have 1,500 companies that hook to us," says Richard Bliss, Allegro's vice president of marketing.

Bliss uses phrases like "no comparison" and "in a league by itself" when discussing GroupWise 5.5. First, Allegro handles their installed GroupWise users with "just a few servers" for almost 300,000 users offering "unparalleled scalability."

Second, because Allegro acts as a clearing house for all their customer's mail, the ability to add gateway components such as faxing, pagers and Web access is important to them. "Any gateway that GroupWise

runs, I can slap on and our customers can run," says Bliss.

Both Bliss and Rhoton tout GroupWise's Web connectivity as one of its strongest features. First, it allows documents to be published or shared, directly to the Web the same as it's shared with another user. The document retains its native format in the library but is presented as an Internet document when asked for.

Bliss talks about the SMTP gateway, which queries the target GroupWise system to check its status. "That lets us guarantee delivery of mail," he says. It also allows for the "unsending" or retrieval of mail messages, or what Bliss refers to as "the save your job feature."

This Internet addressing feature, using DNS lookup, also allows a GroupWise system to send a message with all its GroupWise attributes, including encryption, intact.

Summing up Novell's view of GroupWise 5.5, Rhoton says, "It's the first step in true business-to-business collaboration."

*Ken Deats,
Associate Editor*

On The Road To Recovery Planning

Today's High-Availability Requirements Expand The Traditional Hot-Site Model

RECOVERY TIME FOR one 24-hour outage could be a week or more. Data generated between your last backup and that outage may be gone forever. Until that data is recovered it's unlikely that daily production can resume. Advanced recovery programs may be what's needed.

Steve Turner

Ten years ago, you had the luxury of several hours after the close of business to do batch processing and make system changes. But not today. No way.

Think about it: Do you know what the impact would be to your business if your IT systems were unavailable for just one day? How current would your data be once the systems are restored? How long would it take to manually re-enter all of the data generated during that 24-hour period? Would your business survive? Would you?

If you've come to believe that the "transaction is the data," then understanding the Recovery Time Objective (RTO) and Recovery Point Objective (RPO) for protecting IT systems and data is absolutely essential in identifying what systems require advanced recovery solutions. And also, what advanced recovery alternatives are the best for your organization. If your systems are not available for any given amount of time, establishing the RTO and RPO

requires a realistic assessment and quantification of the roles as well as the impact that technologies and applications have on your business as well as the costs involved in your particular business model.

QUICK RECOVERIES

Numerous advanced recovery solutions exist and the following options are all available for HP environments. Of course, each solution has its own particular benefits depending on your organization's business goals; for example, better customer service or shipping products on time, or especially in e-commerce.

Remote Vaulting. For organizations with a recovery site located far from their home site or those that have thousands of backup volumes supporting Very Large Databases (VLDB), remote vaulting of tape-based data to an automated tape library can substantially reduce recovery time. Vaulting to a tape library also aids with the recovery point by positioning backups off-site immediately, not hours later when the off-site

storage delivery service arrives.

Standby Operating Systems. Maintaining a remote copy of the operating system on disk that is directly attachable to the recovery processor provides an organization the ability to bring systems up immediately at the time of test or disaster at the recovery site. The standby operating system solution is best used in conjunction with other options, such as with a standby database, otherwise the system is up and available but has to wait for other resources before the recovery can continue.

Remote Journaling. If you're concerned about improving RPO rather than RTO, consider remote journaling. This solution includes intercepting the writes to a local log or journal and transmitting a copy of those writes off-site in real-time, providing for recovery to a point extremely close to the point of failure.

Database Shadowing. Database shadowing is the combination of a point-in-time copy of a database on disk (standby database), remote journaling and the regular interval application of the log/journal updates to the database. Database shadowing is a flexible option for managing to an application-specific RTO, allowing application updates to be shadowed as often as required to meet the RTO.

Remote Mirroring. Remote mirroring is one of the hottest topics in advanced recovery today. With this solution, another copy of an organization's data is maintained at a remote location. Organizations with the most to gain from remote mirror-

ing are those that can easily segregate critical applications or those with applications critical enough to warrant the added expense of remote mirroring for the entire enterprise.

There are two methods to achieve remote mirroring: a software solution or by hardware/microcode. A major advantage that hardware mirroring has over other advanced recovery techniques is that a single solution can protect several platforms and any data type that can be stored on disk.

Because IS personnel only have to manage a single solution in this scenario, it's likely to require fewer resources and generate savings that should be calculated when weighing the costs.

System Replication. System replication provides a continuous operating environment by duplicating systems, data and network at a remote location. System replication is the most comprehensive solution for addressing RTO and RPO. However, it is also the most costly.

Hot Network Node. Establishing network communications at the time of a disaster can be complex and time consuming; pre-staging of the configuration eliminates error and excess recovery time impact. One way to do this is to locate a hot network production node in the same location as the recovery capability. The hot network node is continually monitored and in use, thereby minimizing the failure potential.

ON AGAIN OFF AGAIN

It's important to note that each of the above solutions requires an off-site location. On-site solutions are also available. For example, HP's MetroCluster and MC ServiceGuard both help ensure high-availability. However, these solutions have distance-limitations, meaning they can only be co-located or located very near to the production environment.

If you're evaluating on-site alternatives, be aware that while they can be of tremendous help in restoring after hardware or software failures, an

Understanding the Recovery Time Objective (RTO) and Recovery Point Objective (RPO) for protecting IT systems and data is absolutely essential in identifying what systems require advanced recovery solutions.

organization still remains highly vulnerable. Should a fire, flood or other sudden disaster make the primary site or general area of the primary location inaccessible, these solutions probably also become inaccessible.

HANGING IN THE BALANCE

As organizations increasingly rely on distributed systems and the cost of downtime becomes higher, understanding and implementing the right

balance of traditional and advanced recovery solutions based on the organization's recovery time and point objectives becomes critical to ensuring business continuity. After all, how can you begin business today, if you don't know where you ended yesterday?

—Steve Turner is program manager, distributed availability solutions, for Comdisco Inc. in Pittsburgh, Pa.

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IT Strategy Keeps Pericom in the Chips

IN THE SEMICONDUCTOR industry, IT managers know that manufacturing is the most visible aspect, but it's the efficiency of unseen processes that spell success. In an industry where microchip products operate in nanoseconds, can customers expect a comparable level of service — not weeks later, but within the same day?

Dan Wark

Pericom Semiconductor's (San Jose, Calif.) patented innovations and "silicon families" include CMOS interface logic chipsets, clock frequency generators and drivers. But Pericom's 50 percent annual expansion further magnified already existing problems. For example, the increased chance of mishandling orders and other data between company headquarters and other offices and warehouses throughout the United States, Europe and Asia as well as to distributors, contracted manufacturers and customer-OEMs.

A PLATINUM INCEPTION

Since its 1993 inception, Pericom used a Platinum Technologies (Oakbrook Terrace, Ill.) DOS-based system for distribution, General Ledger, Accounts Payable and Accounts Receivable. As the company grew, it was unable to update the system and modify the small part number fields to provide for larger numbers or correlation with customer part numbers. That limitation

required "seat-of-the-pants" fixes and workarounds.

Nor did the existing system accommodate line item details. Line items containing multiple deliveries forced company planners to manually separate and fulfill orders. Not surprisingly, the ability to trace specific deliveries to corresponding line numbers became even more important as the number of customers grew steadily.

One pressing problem was to respond to customers clamoring for Electronic Data Interchange (EDI). Sales and production departments used Excel spreadsheets to initiate and track work orders. They noted work order changes on the margins of paper reports and relied on these sheets to instigate order changes downstream. Putting a manual, paper-based interface on an otherwise automated data system was not what the company really needed.

Mapping the design needs of customer-OEMs, often through a distributor, requires powerful tools. Pericom's search for an ERP solution began with documenting enterprise

requirements. A search team of managers from Customer Service, Distribution, General Accounting, Production Control and Manufacturing Planning and Operations turned up five possible software solutions.

The team compared the merits of those applications. The suitability of some and their adaptability to industry-specific process management requirements removed most of the prospects from the short list.

The OneWorld suite, from J.D. Edwards, however, stood out. But as an AS/400 application, it presented a complication to Pericom's Windows NT-based computing environment.

SEMI-SUITE MAPPING

The product mapped well with processes specific to semiconductor manufacturing and distribution. For example: much more detailed line item reporting, provisions for rapid order validation, support for integration of the legacy database and future Web-enablement to support the streamlining and remote access of sales functions.

The remaining reservation, the requisite importation of an AS/400 system, became moot. Having established a relationship during the product suggestion cycle, Pericom and J.D. Edwards reached an agreement to host beta testing of OneWorld. As a client-server solution in the company's NT environment, OneWorld dovetailed nicely into the existing technical competencies (and investments) with CAD systems already

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based on HP-UX, NT and an Oracle RDBMS.

In 1997, Pericom became the first operational client-server site running OneWorld on a 2-way HP 9000 D350 Enterprise Server, with 1.1GB RAM and 52GB storage. All three companies were significantly accountable to each other, dedicating senior management to ensure resource availability.

The good news for users is that corporate data is now more integrated and accessible. For IT managers, there are a number of consequences: Being the "engine" for ERP processes that will extend throughout the enterprise, hardware selections take on greater significance. Because of the high cost of downtime, reliability is key. Therefore, platforms cannot be considered commodities and purchase decisions become pivotal.

Pericom engineers were already using HP 9000 workstations and software from Cadence Design Systems, Inc. (San Jose, Calif.). Electing to use the client-server architecture with HP-UX, the choice of the OneWorld ERP system enables Pericom to bring additional leverage and utility for the engineers.

The first phase brought 75 users online with OneWorld's Distribution and Financial modules. The MIS department wrote batch reports to interface the J.D. Edwards Demand and Finished Goods inventory information with Access, the legacy database with work in progress data.

Because the same managers who evaluated and selected the suite's tools orchestrated planning and implementation, Pericom was able to install in April and go live in December of 1997.

ROCK ON THE WATER

The microprocessor industry measures acceptable manufacturing failures in fewest defects per millions. Pericom's goal is fewer than 30 electrical defects per million units. But when the rate of defects becomes so low it's like trying to squeeze water

out of a rock. Then humans cause more defects and errors than manufacturing operations.

When sleeve after sleeve of microprocessors test to extremely low defect rates, the most troublesome situations become calls from customers saying, "You shipped me the wrong part number," or "I ordered 2,000 and you shipped me 1,852." That's when Pericom needed to concentrate on improving other areas of the operation, such as distribution.

The first move was to modify split-line scheduling. Working with the J.D. Edwards consultants, Pericom optimized the system with validation logic. Data such as order minimums and standard lot sizes that had been used to manually validate orders is now automated, freeing Customer Service staff to concentrate on excep-

tions, rather than on every order.

Now, when a shipment is rescheduled, Production Control codes it electronically with yield, time, materials availability, pricing and engineering data. This benefits Pericom in two ways: Customer Service is able to communicate with the customer; and Operations can analyze problems and opportunities.

In a business characterized by customers' products changing at an exceptional pace, once we solve the impact of this on manufacturing, we can accomplish similar success with distribution and related service processes for our customers faster than our competition.

—Dan Wark is Vice President of Operations at Pericom Semiconductor Company.

PROOF IN THE CHANGE

Using the pre-existing DOS-based system, Pericom's order accuracy was 95 percent compared with an industry average of around 90 percent. The ERP system went online early in 1998 with 75 users of the OneWorld Distribution, General Ledger, Accounts Payable, and Accounts Receivable modules.

Since installation, over 98 percent of line items have been shipped on time. Among the other improvements:

Orders get into the system faster. Previously, there was a lag time of 24 hours before orders were even entered. Now, if in an order comes in at 10 a.m., it can often be shipped by that afternoon.

Order validation is highly automated. Previously, Customer Service consulted an Excel spreadsheet to compare the shipment to the order. Now, the system automatically validates the quantity, price per quantity, price per line item and price per order based on the contract with each distributor. It also manages new contracts by adapting to pricing changes by date.

Quick inclusion of new products. OneWorld allows changes without downtime. Tracking the development of new products allows anyone in the company to know if an item is in pre-release or full production.

The J.D. Edwards Manufacturing module is targeted to go live in January 1999. At that time, the OneWorld suite will drive nearly 80 percent of Pericom's operation.

-D.W.

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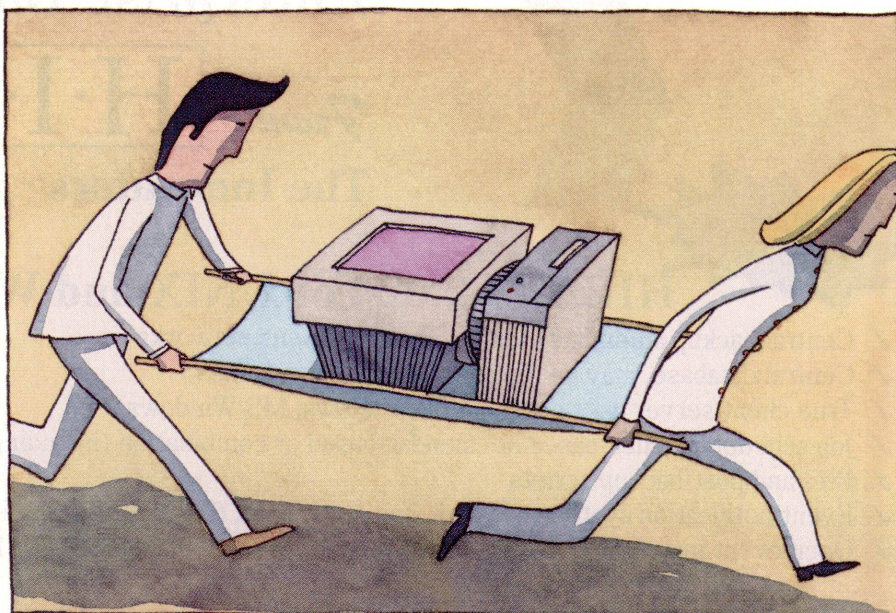
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The UPS And Downs (And Ins And Outs) of UPS

A UPS USED TO BE a battery connected to a power source on one end and a server on the other. And that kept the server alive long enough for an operator to do an orderly shutdown in the event of a power failure. Not anymore, as UPS' come out of the closet and get caught in the Web.



Ken Deats

Web-based management has become the IT siren's call of the 90's. Every hardware manufacturer trying to avoid the rocky shoals of lagging behind the competition must factor that trend into its product line. This is true, it seems, even in products like battery backups that once seemed so fundamental in design.

American Power Conversion (APC; West Kingston, R.I.), MGE UPS Systems (Costa Mesa, Calif.) and Exide Electronics (Raleigh, N.C.) are all familiar names to IT managers. Combined, they make up a significant

segment of the UPS and power management systems market for mid-range data centers.

NETWORKING NAVIGATION

Not surprisingly, network integration, centralized management and evolving protocol standards are determining factors in charting their competitive course.

"Web-based management is the most important trend we've seen in the last few years," says Eric Kaufman, PowerChute Plus product manager for APC, perhaps best summing up the new standard in power management systems. "Users want to manage [UPS'] from one central console anywhere on the network."

"Our customers are re-evaluating

protocols," says Herve Tardy, director of marketing at MGE. "We're looking at WBEM instead of SNMP in the future to integrate directly with management software like OpenView and Unicenter TNG."

"We're investigating new technology not limited to SNMP," says Marcus A. Maxwell, senior software product manager at Exide. But, he adds that in the near future he sees no replacement for SNMP.

APC has installed over 6 million units worldwide. It has done development work or consulting for Novell, IBM, Microsoft, Cabletron, Compaq and Artisoft and provided the power management for HP systems at the 1998 World Cup in France.

MGE stakes a claim to being the

world's second largest manufacturer of power protection equipment. Founded almost 50 years ago in Grenoble, France, it has four manufacturing facilities in the U.S., Europe and Asia and 136 service locations in 80 countries.

Exide Electronics has been manufacturing UPS equipment for 35 years. It brought the first digitally-controlled, fault-tolerant UPS to market in 1972.

POWER THREADS

Increased central UPS management and alarm notification is a common thread running through the product plans of all three competitors. Primarily, this is accomplished with some sort of snap-in to a popular network management tool like HP OpenView and increasingly more so, Unicenter TNG from Computer Associates (Islandia, N.Y.).

"Customer demand used to be for Novell ManageWise," says Exide's Maxwell. "Then it seemed to change rapidly to OpenView. Now it's focused on Unicenter."

MGE's Tardy agrees: "We see Unicenter TNG becoming the platform of choice. It's the one we're most focused on."

APC has had a long relationship with HP. Along with their showing at the World Cup, APC and HP incorporated a UPS with every NetServer sold in China the last few months. Its product family includes the PowerNet Agent that integrates power alerts directly into TopTools (HP's system management software) and monitors any NetServer from an NT workstation and PowerChute HP-UX WebAgent that provides SNMP monitoring of any APC power device via a Web browser.

"We focus on tight integration with enterprise management platforms. Our customers spend a lot of money on OpenView and Unicenter," says Adrian D'Souza, APC's product manager for enterprise management. "They want to make sure that UPS applications are certified [by those vendors]."

Asked to predict what's over the horizon, all three experts saw increased incorporation of software components into their UPS hardware; and, in turn, increased network integration. But that basic hardware configuration is not likely to change soon.

The nickel-cadmium (ni-cad) battery's longer lifetime, than the four to five years of the traditional lead acid battery, makes that technology attractive, says MGE's Tardy, but its prohibitive cost keeps it in the background. And, batteries able to sustain a longer charge, say eight hours, would take up a whole room.

For those reasons, "There's not so many new things in power management coming out. It looks like the combination of generator and UPS is still the best solution."

Power quality remains a focus of top priority for MGE, says Tardy. He explains how, with the increased reliability of small electronic components such as PCs and desktop printers that are turned off and on frequently, the steady flow of power, like the ripples in a pond that are disturbed if a boat crosses over them, is easily interrupted. That effect is called "harmonics," and MGE is concentrating on their Sinewave products to act as a harmonics filter.

PREDICTING TRENDS

"We see a trend towards higher software content in UPS products," says Maxwell at Exide. "That will mean more software functionality built into the hardware."

And, for Exide, trend analysis of the entire power train will be a primary function. "An orderly shutdown is not as important for large systems," he says. "They want to predict what will fail by tracking indicators like temperature levels and then provide full SNMP connectivity."

To that end, Exide is partnering with HP, Computer Associates and Novell to provide a snap-in for its PowerVision management software for OpenView, Unicenter and ManageWise, which will address not

only the server farm and its components, but also generators, switch gear, power distribution units (PDUs) and batteries.

"Our new approach is to make life easier for users with out-of-the-box solutions," he adds. Exide and APC are also concentrating on what they see as increased demand for remote service functionality.

Exide offers its PowerCare Sentinel service. It provides UPS software not sold to users but installed as part of a service contract that remotely monitors its equipment. A power event automatically generates a call to the Exide service center. The call, in turn, creates an alarm that is routed to the appropriate service personnel.

SENSITIVE ASSISTANT

APC offers a new feature called Assistant Online — a Web-based, context-sensitive link to the APC support database, which detects the UPS model and serial number, then provides, when the APC logo is clicked, step-by-step resolution for the problem being experienced and offers a list of resellers if needed.

APC is blurring the line between the UPS as a provider of uninterrupted power and UPS management software as a Web-enabled tool for server control. Its new MasterSwitch and SmartSlot technology allows a Web browser to power off and reboot servers from anywhere on the network or via an out of band connection with a modem.

Power related events remain the second leading cause of server downtime. For UPS manufacturers, the core issue is availability and providing data integrity. And, APC's D'Souza probably summarized the industry's future plans best when he remarked, "the Internet is the key." ♦

RELEVANT WEB SITES

APC - www.apcc.com

EXIDE - www.exide.com

MGE - www.mgeups.com

A CONVERSATION WITH ROBERTO

George A. Thompson

ON THE VERGE OF THE 21ST CENTURY, the Internet has given us an electronic horn of plenty. Plenty of information, that is.

"The Net" and the World Wide Web have also put IT departments on the horns of a dilemma. Worldwide access to corporate information means more access to corporate IT systems, which has led to concerns about security. In addition, e-commerce sites are establishing Internet infrastructures while pioneering new business models. Of course, all that information is expected to be continuously available. Or 24x365 in the parlance of IT culture.

That's why HP created the Internet Security Operation (ISCO) as part of the Internet Software Business Unit (ISBU). According to Roberto Medrano, the ISCO's General Manager, "we're a hot 'start-up' [organization] within HP." The ISCO is part of Lew Platt's plan to jump start new business [opportunities] every 18 months. To that end, HP has brought in executive talent from outside of HP's hallowed cubicles. It's a rare exception for HP, well known for grooming its executives in the HP Way.

Medrano, formerly CEO of Finjan Inc. (San Jose, Calif.) is one example. Bill Sudlow, formerly with Claris Software (Apple's one-time software spin-off, now FileMaker, Inc., Santa Clara, Calif.) is also on-board as Vice President of R&D as well as Lior Arussy as Channels Marketing Manager, also from Finjan. Other notable outsiders have come from Computer Associates, Trend Micro and Secure Computing, among others.

The first two products that Medrano and his team are responsible for developing and marketing are HP's VirtualVault (announced in 1996) and Authorization Server (announced in July 1998). The success of both products, under the Praesidium brand-name, will play an important role in HP's plans to grow its software business, while shedding its historic market dependence and traditional mind share as a hardware-only company.

In an exclusive *HP Professional* interview, Editor-in-Chief, George Thompson spoke with Medrano and Sudlow about their plans, products and new possibilities.

MEDRANO

HP Pro: Why the emphasis on being a start-up and transplanting outsiders?

Medrano: [HP] had mechanisms and processes in place that were designed for a hardware-related business. We are developing the new software-related businesses and processes. We need to be successful as a start-up.

Sudlow: In a company like HP, with a large portfolio of businesses, in the past, they maybe didn't have the same time-to-market urgency as in most of the software start-up world. If you don't get your product out in the next week or next month, it can be a 'quick death' scenario.

For example, I met with the [HP] development teams that were in place and they were thinking in terms of nine, 12, or 15 months between major product releases. You just can't afford to wait in between major releases. The competition is changing so fast, you have to respond quickly. You have to focus on developing software in an incremental fashion.

HP Pro: Can you explain the overall capabilities of VirtualVault and Authorization Server?

Sudlow: If you have a Web browser across the Internet connecting to some application on the back-end, VirtualVault sits on the boundary. That is, it actually works in parallel, so if you have a firewall to protect

different IP addresses to allow for email, etc., the VirtualVault containment capability allows you to ensure data and application integrity. Via a trusted gateway agent, you can pass only certain parameters from between the outside [your Web server applications] and inside compartment [your internal database] — say a CGI script. The only people that can get on the inside are the people who have the security administration of that platform.

Medrano: When you need to open your internal databases through a Web connection, you need a secure Web server like VirtualVault. That's why VirtualVault has been successful with the banks doing business on the Web.

Sudlow: Authorization Server provides what we call "discriminating access" to individual business transactions or portions of business process. It's particularly important for extranets like supply chain management — where you want to share your application with your business partner but don't want

to give blank access. You can provide only one or two screens and maybe do only a restrictive set of transactions within for say, your SAP application on the backend. So, Authorization Server allows customers to assign discriminating access for Web-enabled applications.

HP Pro: Can the two products work together?

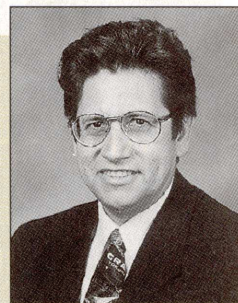
Sudlow: That's the beauty of it. The two products work together to enable secure transactions and access to information at the Web boundary protection area. It can be used on intranet applications as well, but the press and analysts seem to think the most exciting area is its use on extranets — like supply chains. But the products work separately or work together seamlessly.

HP Pro: What's the word Praesidium got to do with anything?

Medrano: Praesidium is our umbrella. Praesidium equals security at HP. Praesidium is something that I own, manage and develop as a security brand.

Sudlow: Much like OpenView is a brand name for a large number of

Praesidium is our umbrella. Praesidium equals security at HP. Praesidium is something that I own, manage and develop as a security brand. — Robert Medrano



products under that umbrella. We are establishing Praesidium as the brand name for HP security products. That's actually an important point.

HP Pro: Speaking of which, how do the security products integrate with OpenView?

Sudlow: One of the key capabilities with Authorization Server is the auditability built into the product. And those auditability records can be sent to [OpenView's] IT/Operations.



Many people view security management as the next logical extension of network management.

— **Bill Sudlow**

You can set up business rules, for example, if someone continues to try over and over again to get access to a particular transaction you can send an alarm about it to OpenView.

From a strategic point of view, we believe there is going to be a tremendous amount of synergy between all [the present and future] security products and OpenView. Many people view security management as the next logical extension of network management. And how does it fit within their IT infrastructure.

HP Pro: The products are specific to HP-UX platforms. Correct?

Sudlow: VirtualVault is just on HP-UX. Authorization Server has a plug-in to the Windows NT/Netscape Enterprise Server. From an overall standpoint, NT and HP-UX are strategic platform for us.

HP Pro: Any outstanding competitors in this space?

Medrano: There are none [now] known for VirtualVault. That's why we have taken a leadership position with 70 percent of the Internet banking market.

Sudlow: For Authorization Server, there are some newcomers like n-Commerce and Netegrity.

HP Pro: What's beyond the Internet banking segment?

Medrano: ISPs and telecommunication companies are the next targets. A leading ISP, PilotNetwork, which by the way is a Sun shop, became a VirtualVault customer and also a reseller. A third one is ERP-related — anybody that has a SAP application out there and wants to open it up to the Web. ♦

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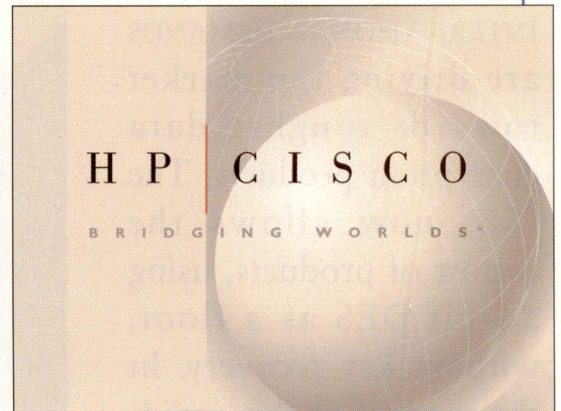
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HEWLETT-PACKARD COMPANY AND CISCO SYSTEMS PARTNERING TO PROVIDE ENTERPRISE-WIDE NETWORK SECURITY SOLUTIONS:

HP OpenView Node Sentry

Security for companies doing business via the Internet has come of age. Few challenges are as daunting as the corporate requirement to deliver high performance network services along with the security required for customer assurance. Until now, IT professionals have had to evaluate and choose among non-interoperable niche products from multiple vendors and try to manage it all without clear standards. The selection of enterprise security products is now being simplified by Cisco Systems and Hewlett-Packard, who are combining efforts to deliver the first multi-vendor enterprise network intrusion management solution - the HP OpenView Node Sentry system. The collaboration of the leader in network security technology partnering with the leader in network management systems signals a significant industry shift toward managed network security. With this product integration, Cisco and Hewlett-Packard (HP) begin to bring enterprise-wide network security into a manageable framework. HP OpenView Node Sentry Sensor is based on Cisco's NetRanger, the premiere network intrusion detection system (IDS) and is centrally managed by the HP OpenView Node Sentry Console, which is based on the renowned Network Node Manager. Internet users, Intranet users, and extranet partners can all be protected with a standards based, centrally managed, distributed IDS. HP and Cisco are laying the foundation for enterprise security management to become a routine part of daily system operations for e-commerce and other Internet-based activities.



The HP OpenView Node Sentry system includes the following features:

- ability to detect unauthorized activity and notify appropriate network-security operations personnel
- automatic blocking of unauthorized activity
- capability to collect pertinent data for reporting analysis and forensics purposes
- ability to provide remote, central management capabilities

Adherence to standards increases interoperability, reduces training time and eases support costs over time. Cisco and HP have worked together to provide a combination of tools to secure, monitor, test, and improve network security. Node Sentry leverages existing network and management infrastructure. Now customers can easily add complementary intrusion detection technology to their existing firewalls and authentication systems.

The months and years ahead will surely see steady growth in the demand for enterprise-wide network security. HP OpenView will continue to set the standard for sophisticated intrusion detection. Future Node Sentry products will also integrate with system sensors, and application sensors for ever increasing effectiveness in locating and identifying intruders and ever increasing efficiency in appropriately responding to them.

Contact

HP: Sanjay Mehta 970.898.3828

Cisco: Adnan Ansari 408.526.6104

Securing Global E-Commerce

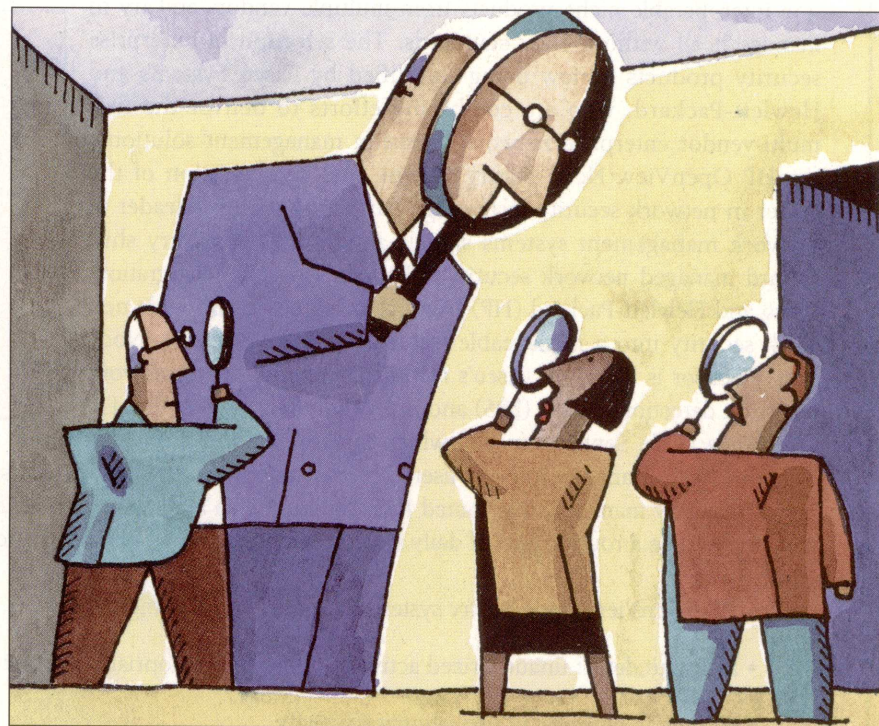
HP Sees Export of High-Test Encryption as Key to Boosting International Sales

INTERNATIONAL DEMANDS are driving the market towards tougher data encryption products. The U.S. now allows the export of products, using 56-bit DES as a floor, without key recovery. In the turmoil of this rapidly evolving market HP is exporting VerSecure encryption technology.

Monica Fuertes

Security has always been a pressing concern for those optimistic about Internet-based communications in general and e-commerce in particular. While domestically strong encryption can be easily obtained, security in foreign countries is another matter.

"Companies need to maintain the integrity of information," says Nanette DiTosto, vice president of CertCo (New York, N.Y.), a company providing HP with the certificate authority for its VerSecure product. "They need to know who really sent the data. If someone is buying \$100 million of product from you, you're



going to want to know whether that buyer is really authorized to do that."

SECURING CYBERMARKETS

Fearing that sensitive information such as credit card numbers or proprietary business data can be intercepted and encryption codes cracked, users will be less likely to use the Internet, especially for e-commerce, effectively choking, or worse, killing the development of cybermarkets. But developing and exporting longer and stronger encryption algorithms to mitigate that problem, creates other kinds of problems for U.S. federal law enforcement officials.

Namely, that if such longer algo-

rithms are freely exported, it will hamper their ability to detect and prevent criminal activity. HP's VerSecure includes a key recovery capability that permits the plain-text recovery of encrypted data or communications. Users can choose from limited to very strong encryption and select whether or not to activate the key recovery capability.

VerSecure also allows companies to have greater control over what their employees download from the Internet. "With VerSecure, a company can say 'I'm giving you a computer. You can only use it for company business. I want to know what's on it and that you're using it according to

Fearing that sensitive information such as credit card numbers or proprietary business data can be intercepted and encryption codes cracked, users will be less likely to use the Internet, especially for e-commerce, effectively choking, or worse, killing the development of cybermarkets.

corporate rules," says DiTosto.

Export restrictions on encryption technology have eased substantially since December 1996. Then the authority for licensing commercial encryption technology was transferred from the State Department's munitions list to the Commerce Department's dual-use technology list.

The decision to allow VerSecure's use in Japan (in May 1998) is yet another step toward liberalization, says Stewart Baker, a partner at the Washington, D.C. law firm Steptoe & Johnson who provides legal advice to HP about VerSecure. It suggests a new approach by the government to export controls. "Whenever you try to do something new, you start to run into resistance. In an area as charged as encryption, that resistance can be pretty stiff."

LICENSE TO TRUST

This most recent license gives HP users in Japan access to 128-bit and triple Data Encryption Standard (DES) encryption for a wide range of applications including electronic mail and electronic commerce. VerSecure will be installed and managed by a trusted Japanese company, referred to as a Security Domain Authority (SDA).

The SDA, responsible for making encryption policy that adheres to Japanese law, will distribute software tokens that activate encryption capabilities that support Japanese policy for Japanese companies. It also opens the door to smoother transactions with the large international banks

based there.

"Allowing VerSecure to be deployed in Japan means that a bank that has trading partners in Japan can use the less expensive channel of the Internet to carry on their business with much higher levels of security,"

says Scott Smith, an industry analyst with Current Analysis, a competitive intelligence and analysis firm located in Sterling Va.

Indeed, HP hopes to close out 1998 with export licenses for at least 20 countries. In addition to Japan, HP previously was granted approval to export VerSecure technology to the United Kingdom, Germany, France, Denmark and Australia. Ultimately, the availability of more improved encryption technology will provide a secure ground for global e-commerce while encouraging more people around the world to transact e-business.

—Monica Fuertes is a technology writer for the Washington News Bureau.

HARDWARE CRYPTO-NITE

Under the old system of export controls, U.S. software or hardware companies whose products included encryption capabilities would have to develop two separate products. One with high-test encryption for domestic users and another product with 40-bit encryption for export. Now, these companies can develop a single product with strong encryption, potentially saving large sums of money on development and marketing.

According to Doug McGowan, HP's director of VerSecure, the federal government granted HP an export license for four reasons: VerSecure is hardware-based technology, which he says makes it much harder to hack; the technology is only being exported to a limited number of responsible Japanese companies that follow the laws of that country as end users; HP provides key recovery technology as a user option; and it requires a yearly certificate to validate the technology, which reminds users to remain in compliance with the laws of their country.

To use VerSecure, current applications need an API capable of accessing crypto, such as Crypto API from Microsoft or Intel's CDSA. Another benefit of VerSecure is that it simplifies product development and deployment. Now, producers don't have to manufacture and support two different versions of the same product, one for the U.S. and one for international distribution. "For companies, having to make two versions of their product is expensive — very expensive. So this architecture is a solution to that plaguing problem," says DiTosto.

—M.F.

Kicking Up

High-Availability



At The World Cup

**HP Prepared
for the
Worst,
While
Expecting
the Best**

George A. Thompson

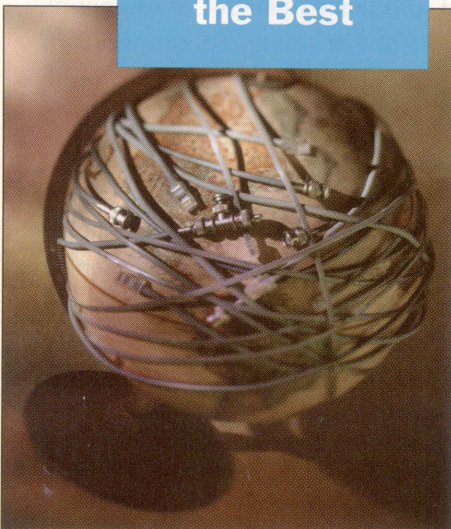
"The World Cup and all the organizations that it entails is a microcosm of the Electronic World," said Alex Sozonoff, HP vice president and general manager for HP's Marketing Operations Group. So, it was within that e-world paradigm and as the 1998 World Cup's official technology supplier that HP employees around the globe provided an elaborate and sophisticated e-business and e-commerce IT platform.

With all the international attention focused on the last World Cup in this century, HP had to see to it that everything involved with the Games — ticket sales, athlete and media accreditation, scoring, providing game statistics and play-by-play information and many other details — happened without snafus of the kind (the content server went down for three days) that garnered IBM so much neg-

ative publicity during its handling of the 1996 Summer Olympic Games. But it was just more than a HP marketing opportunity.

"The World Cup was a great learning experience in building a collection of mission-critical systems that had to be up and running all the time. And really make them perform," said HP's CEO Lew Platt. "[And] what we learned from doing [at the World Cup], we think we can apply to a lot of customer situations."

Like any large IT project, HP didn't go it alone. Long before the first game of the World Cup was played, HP and its partners — EDS, France Telecom and Sybase — demonstrated their own kind of teamwork. Employees found the devils in the details of an elaborate and sophisticated computer and commu-



nications IP-based network — and excoriated them during the weeks from June 10 to July 12.

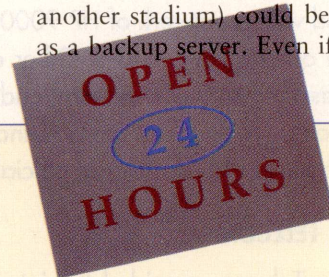
Although there were many lessons to be learned, the most important, by far, was the need to meet the business continuity and high-availability requirements necessary “to be up and running all the time.” Delivering World Cup tickets was one of the first major challenges for Philippe Verveer, the IT Director for the Comité Français d’Organisation. (CFO; the World Cup organizing committee). The 16th World Cup also came with new challenges — of the Internet kind. Two Web sites — www.france98.com (available world-

wide over the Internet) and www.infofrance98.com (an intranet available only to the media) — were known collectively as the *World Cup Online*. *World Cup Online*, stored all the information and data about the games, feeding statistics and tournament highlights that included video clips and updated news to the world’s public and international media.

Using Sybase’s PowerDynamo Web server, this central database, (running on a cluster of HP 9000 D370/2), generated Web content then transferred information to the *france98* and *infofrance98* Web sites. Data from the content engine was replicated (using Sybase’s Replication Server)

in real-time to each of the 10 stadium sites, the CFO headquarters and the International Media Center (IMC) to Web Servers. According to HP World Cup 1998 Support Coordinator, Joel Dubedat, the Web server architecture included a HP NetServer LC II running Netscape Enterprise Server on top of Microsoft Windows NT 4.0 at each location.

These Web servers received updates, like scores, news and weather forecasts in real-time, from the content engine. “In case of failure,” explains Dubedat, “of ANY one of these servers, any other server (at another stadium) could be designated as a backup server. Even if the switch



THE HIGH-AVAILABILITY CONFIGURATION OF CHAMPIONS

High-availability was not only required, it was essential. So, two independent MC/ServiceGuard clusters were configured as follows: Cluster 1 was dedicated to the ticketing system. It was composed of a HP 9000 two-way K410 and a uniprocessor K210. The K410 (1GB RAM, 2x FWD SCSI-2 interface, 4GB internal storage for dumps, 5x2GB mirrored external storage using HP MirrorDisk/UX and UPS) acted as the “main” node and the K210 (512MB RAM, 2xFWD SCSI-2 interface, 4GB internal storage and UPS) served as the “backup node” of this two-node cluster. The K210 also supported some non-critical portions of the application; queries for statistics, for instance. The ticketing system supported the selling of 2.5 million tickets. There was no connection with the Internet. These two machines were running HP-UX 10.10 and Sybase System 11.

The second cluster, comprised of three two-way D370s (512MB RAM, 2xFWD SCSI-2 interface, 2GB internal storage and UPS) and 2 external disk bays (4x9GB hot swap disk modules and 2xFWD SCSI-2 connectors and redundant power supplies) was configured for multi-purposes. Each D370 node had physical access to the two disk bays to allow applications failover even in case of a dual-fault. That is, if node 1 failed, then application switched to node 2. If node 2 failed, application switched to node 3.

The HP 9000 D370/2 was configured with 1.5GB of RAM running HP-UX 10.20 with the latest patches, OnLine JFS (for faster recovery), Netscape Enterprise Server 2.x, 2 x HSC 100BaseT network card and High Availability disk bay (2 x 4.3GB High storage with MirrorDisk/UX).

In standard mode, EDS’s SCORE!, which included data on athlete and media accreditation, HR information about the volunteers as well as protocol and transportation data was running alone on node 1; the intranet content engine and e-mail (12,000 mailboxes handled by HP OpenMail) was running on node 2 while the Internet Content Engines was running on node 3.

The two “Content Engines” located physically on node 2 and node 3 contained nearly identical content. This was done to isolate the Internet activity (potentially large number of users, unpredictable behaviour) from the intranet activity. Both of these content engines were feeding their associated Web servers (intranet or Internet).

The WAN connectivity or bandwidth available at each of these sites to the Internet were: 155Mbps for Plano, 45Mbps for Paris (plus an additional 45Mbps link for backup), 100Mbps for Santa Clara and 100Mbps for Herndon, according to Dubedat.

GIVING IT UP FOR THE CUP

EDS

As the systems integrator, EDS (Plano, Texas) personnel started working with the CFO and HP Consulting in January 1995 making several early risk assessments, including one by management consulting firm and wholly-owned EDS subsidiary, A.T. Kearney (Chicago, Ill.). The results included a crisis center to handle external problems and two central hubs of information — a joint partner's solution and a central command center in Paris that acted as a clearinghouse for problem resolution.

EDS, also adapted its ticketing application (based on Sybase's Sybase 11 database) to run on HP-UX (see Sybase below). The ticketing system interfaced with a network of HP 9000 CAD workstations that allowed visualization of seat assignments. Other capabilities included management of all seat assignments, phone, mail and Minitel (See France Telecom below) reservations, waiting lists, cash management, bookkeeping, taxation and ticket production for accredited officials, VIPs, media and sponsors.

FRANCE TELECOM

France Telecom provided the intranet backbone via a fully redundant Frame Relay WAN. That allowed each stadium (and the IMC) to be linked at 2Mbits/s with a hot backup link with automatic switchover (the open shortest path first, OSPF, protocol was used). At the application level, it was possible to reach any node from anywhere (inside the intranet boundaries) for database replication, file distribution, system and application administration. According to Dubedat, "This allowed us to devise recovery procedures on this highly redundant infrastructure."

As part of the ticketing and online services, France Telecom's Minitel, one of the first widespread online services in the world, fulfilled 60 percent of all domestic ticket sales through its 8 million text-based terminals installed in homes throughout France.

HEWLETT-PACKARD

In creating the World Cup infrastructure, HP supplied a panoply of computing hardware, software and services consisting of over 50 HP 9000 systems, 65 NetServers, 2,000 PCs and laptops, 290 AdvanceStack hubs, switches and routers and 600 networked printers.

All that hardware was interconnected throughout Paris and the 10 World Cup stadium sites via HP AdvanceStack switches over 150 HP 100VG-AnyLAN LANs and connected by approximately 250 10BaseT and 100Mbits LAN hubs and 50 HP AdvanceStack routers. At the CFO's datacenter located in Le Blanc-Mesnil, network and systems management consisted of several HP OpenView components: Network Node Manager, OmniBack II, NetMetrix, PerfView and IT/Operations.

Each site featured local area load balancing, which spread the connections over the number of available servers. If a server was busy or failed, no more requests were sent to that server until the problem was corrected.

process was manual, we designed it to be easy to implement. There was no need to modify the desktop environments," says Dubedat.

The Internet backbone was connected to four mirrored sites: one in Paris, France (hosted by France Telecom); one in Plano, Texas (hosted by EDS); one in Herndon, Virginia (hosted by PSINet); and one in Santa Clara, California (hosted by PSINet). Global load balancing between mirror sites was done using a Cisco Distributed Director and like devices. "This is a two-level balancing mechanism (distributed then local)," recalls Dubedat.

As the official public Web site, *france98.com* set four Guinness Book world records:

- 1.137 billion hits — most visited Web site (June 10 to July 12)
 - 10.29 million hits — most hits in one hour (June 29)
 - 235,356 hits — most hits in one minute (June 29)
 - 73 million hits — most hits on an Internet site in one day, June 30.
- The previous one-day hit record was 59 million set by IBM's official Nagano, Japan Web site during the 1998 Winter Olympic Games.

The average response time was 4.78 seconds, says Dubedat, as measured by Keynote systems. (www.keynote.com/measures/world-cup). Also online for the first time was *store.france98.com*, an e-store selling World Cup memorabilia. *Store.france98.com* was designed, configured and managed by HP's Operation Systems Division (HP OSD is located in the U.K.). The e-commerce site maintained an average rate of 760,000 hits per day. HP also used its Web Quality of Service (Web QoS) technology for the first time to ensure around the clock Web availability.

In creating the World Cup infrastructure, HP supplied a panoply of computing hardware, software and services (see *Giving it Up For the Cup* sidebar). While some IT managers are quick to seek out the latest and greatest products, the savvier ones know that "leading edge" is perilously close to the "bleeding edge."

The only glitch occurred when one

venue was forced to run independently of the central host, but the users were never aware of the problem, says Dick Wiles, director of information services for EDS Global Sports.

But Dubedat says, "We decided to use proven technology. We never tried to install the latest product out of the Lab. We decided to use HP technology that had already demonstrated its abilities in mission-critical applications."

—S.R. Rodefer and Lane Cooper of the Washington News Bureau (Washington, D.C.) also contributed to this article. HP Professional would also like to thank Lina Horiuchi of Cunningham Communications and Joel Dubedat and Christian Hostelet of Hewlett-Packard France for their helpful assistance.

Overlaid onto that was a WAN that sent users to the desired site within an optimal response time, says John Watson, director of business development for PSINet's application Web services group. PSINet prepared for the expected traffic volume by using HP's OpenView suite of tools to do proactive maintenance.

SYBASE

SCORE!, an EDS application (used in the 1994 World Cup on Sun Microsystem platforms) was migrated to run on HP-UX 10.2 and Sybase System 11. Aided by EDS Resources, the company's strategic business unit in France, a global team developed the core applications in the U.S. Five Sybase products were used to build the SCORE! applications: Sybase System 11, Sybase's flagship database; PowerDesigner, an application design tool; PowerBuilder, a fourth-generation application development tool; Adaptive Server Anywhere, a mobile database software product; Adaptive Server Enterprise, a large database product; and PowerDynamo, a tool required to do dynamic HTML publishing of the information available on the Web. All logic was written in PowerDynamo's DynaScript and displayed as pure HTML. And the record-breaking Web site traffic gave the company's professional services arm a workout.



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Golden Plated Image

Last month we created the “Golden Image” host. In this episode we’ll create the archive file from that

golden image host.

This archive file is what actually gets expanded onto the disk(s) of hosts that will have software loaded using Ignite/UX. Before we look at the commands involved, there are some details to discuss about what should go into the image.

IMAGE IS EVERYTHING

Previously, we said to load everything you want on a host, then perform any configurations you want propagated to all target hosts that will use this image. In more detail, this can be as simple as throwing some locally used programs into `/usr/local/bin`, but there is generally much more to it than that.

To begin with, when installing the operating system manually, most of us just select and load everything, since it is so much trouble to de-select unused components only to find out that you’ve saved just 15MB in load size. Well, in the case of the golden image host, this time will not have to be spent again and will save that 15MB from being transferred over the network every time you ignite a host. It also might mean that certain patches don’t have to be loaded because they are only needed by a certain language, or bundle.

You should also be sure that the filesystem is setup as you want it, including LVM layout and sizes. This information can be propagated to other hosts at ignition time. You can

also override, or dynamically configure this layout, while still using the same archive image.

As for configuring the host, you will have control over which files go into the archive and which will be “cleared” of host specific information. For example, if all hosts in your network need to be NFS servers, you should configure the golden image host that way. If you want certain menus and actions in CDE, configure it. You should burn a rather serious amount of brain time deciding what goes into the golden image.

Of course you can always test the image, then go back and edit the golden image host and make another archive file. Creating the archive file usually ends up not harming the image host, although it could corrupt the OS. But, so far this has not happened to me.

If there are applications that you want loaded on all hosts using this image, load them on the image host. One issue though, is to be aware of client specific files. Some applications create files that contain some identity of the host on which they’re loaded. You’ll need to fix that after the load with a script. Luckily, Ignite/UX allows us to insert scripts to be run at various times.

SEPARATE ROOTS

Another option is to make separate image files for applications. You can

do this by making a “root image tree,” then installing the application to that directory as the target. You would then make an archive from the root image directory.

The command that creates an archive file is `make_sys_image`. Actually a shell script, it lives in `/opt/ignite/data/scripts`. This is a good design, because very few people will be using it without some editing.

You’re supposed to edit this script before use, so make a copy of it, then start reading. Typically, the copy is moved into a root level directory on the image host.

When building the archive, this script will remove client identity and host specific configurations from many files. You might not agree with which files this should happen to, thus the need for editing. For example, if you use NIS in your network, you might want the `/etc/passwd` and `/etc/group` files to be copied into the archive as is (with the `+` line still in the files).

The script also contains a list of files that are not included in the image, such as NFS automounter files `resolv.conf` and `exports`. If you use the same files on all hosts, comment out the lines that exclude those files.

You can also add directories or files that are not to be included in the image, such as temporary directories you use to take notes, or copy the script to, or even applications loaded that you don’t want propagated. This means that the image host does not really need to be dedicated to the purpose, but it makes it cleaner to start with a nice, crispy, new software load.

It’s possible that the script will cause some harm to the host. This is due to the fact that it copies many files around and does quite a bit of file edit-

ing. Because of this, you really should try to get everything right the first time.

To help, the first time you run `make_sys_image` you should do it with the `-xv` options, or preview mode. It will point out any problems and document what will happen when run for real.

READY, SET, GUNZIP

When you're ready, creating the actual archive file is easy, because most of the work was in configuring the host and editing the script. You need to make a couple of choices as to the type of archive. This is controlled with options. The default is a `pax` GNUzip file, which is what most people use.

If you want a `tar` file, use `-m`. To use `compress` instead of `gzip`, use `-c`. *Note that some older versions of Ignite/UX needed patches before the `pax` archives would work.*

If you're short on disk space or don't want to move a 200MB file later, use the `-s` option to specify on which host to save the archive file. Most people create it directly into the proper version directory under `/var/opt/ignite/archives`. A version directory is named in the manner of `Rel_` followed by the output of `uname -r`. This is the recommended location.

The `-n` option allows you to name the archive file. By default it will be named the same as the image host-name, with an appropriate extension (`.gz`). If you use this option, be sure to include the extension in the supplied argument.

The next step towards a total hands-off software load is to build some Ignite configuration files that tell Ignite how to use the archive. We'll look into these configuration files in the next column of the series.

You can save yourself lots of time building the config files by letting Ignite do some of the work. The com-

mand `save_config`, when run on a host, builds a configuration file that describes the disk and filesystem layout on the host. It also saves some network information.

What I'm getting at, is that you should run this command on the image host to save a copy of the layout used, because it might be exactly what you want on other hosts, or it can be a good starting point.

HOSTING UNIFORMITY

Some administrators are lucky because they're in a uniform environment. This means all hosts in the network are to be configured similarly, so they can use the same operating system load and even the same application loads, if any. If you're in a data-less client situation this is probably true — especially so if you're using application servers, or have all applications NFS mounted. Other networks have different requirements about what software is loaded on each machine or have

several configurations.

You might need to configure another disk or image host so that you can create archives with different information in them or different applications. Remember that you can use multiple archive files, so if only the application set is different, you might consider having one OS archive and a few application archives. Which one is loaded can be determined at ignition time.

Many configuration issues can be controlled by the Ignite config files, so before you go building lots of archives, wait until we dive into writing configuration files.

—Fred's looking for an agent to help improve his image!

You should burn a rather serious amount of brain time deciding what goes into the golden image.



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Get Active On Active Directories

In my October column, I discussed Windows 2000's Active Directory (AD) features and contrasted them

with the current domain model. This month, I'll discuss some things to make your move to AD simpler.

AD uses a structure Microsoft describes as forest and trees. The tree derives from the hierarchical structure of the namespace. That is, individual hosts reside in tree structures that can grow to accommodate diverse branches. For instance, the tree root `acme.com` can be divided into `sales.acme.com`, or `finance.acme.com`. The tree can be further branched with `toys.sales.acme.com`, or `clothes.sales.acme.com`.

This tree can closely model the network on the organization's actual structure. In fact, Microsoft describes these sections of the AD as organizational units.

FORESTRY MANAGEMENT

Large firms may manage multiple organizations and it may not be appropriate for these groups to share a namespace. For instance, large aerospace firms have separate and distinct divisions to support commercial, military and aerospace manufacturing. It makes sense to treat these groups separately with tree structures such as `bigplane.com`, `bigdefense.com` and `bigspace.com`.

Multiple trees comprise a forest; these three separate namespaces can reside in a single forest. The key to maintaining these apparently separate entities in a single forest is the global

catalog (GC).

The GC contains directory information from all source domains in the tree. All objects in the AD have entries in the GC. The GC is maintained in part to provide a single source for locating objects no matter where they are in the directory tree.

An abbreviated catalog is maintained with the objects and their attributes. This abbreviated catalog is a partial replication of individual directories within the trees, eliminating the need to go into the tree directories for every lookup.

2000 AD

AD will be quite different from NT's domain model. If you're planning a move to Win 2000, consider what you can do now to ease the transition. Take into account what the AD is designed to do: provide a single, unified directory service to replace the difficult to configure and manage multiple domain structures.

If you have a single domain in your organization, you shouldn't need to do anything to prepare for AD. However, if you have multiple domains, consider consolidating them. Sometimes multi-domain schemes arise over time as an organization's various groups adopt NT. Shortcuts such as trust relationships make all the domains work together and soon become difficult to manage. To prepare for AD, simplify and con-

solidate these multi-domain structures into fewer domains.

Unfortunately, this is not always simple because of security identifiers or SIDs. SIDs are unique numeric identifiers applied to objects such as domains, user groups and user accounts generated when the account is created. The user name is for the human's benefit but is only used by NT for display purposes.

The SID is really the basis of NT security as it is used to track a user's rights, group memberships and file ownership. It is generated by the primary domain controller and is unique to the object it identifies. Even if you exactly duplicate an account from one domain to another, it won't have the same SID and won't have access to the same resources.

SID SEIZER

A tool called Phoenix from Fastlane Technologies (Lawrence, Kan.; www.fastlane.com) specifically addresses SIDs. It identifies users, global groups, local groups, access control lists, user rights and computers (all the items affected by SIDs) in order to copy them from one domain to another.

This makes consolidating domains simpler than manually identifying and changing all these objects. After copying the SIDs from one domain to another, Phoenix tracks any changes in a log file and leaves the original domain intact and usable.

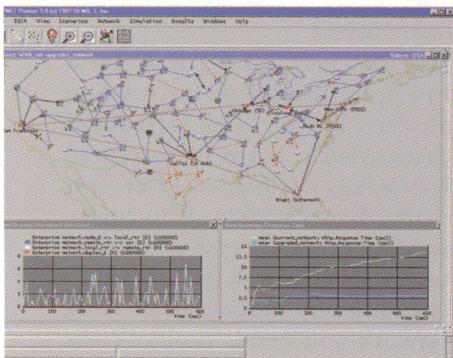
Windows 2000 AD will allow you greater choice in network design. By abandoning the domain model, an enterprise can organize its network virtually any way it wishes, making Windows 2000 ready to support an enterprise. ♦

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Selling NT Outside The Box

This past July, Compaq announced that it's extending and expanding its virtual solutions model with

activeAnswers "solutionware."

With activeAnswers, Compaq hopes to accelerate Windows NT solution adoption on Compaq systems by attracting a broader range of software developers and creating a greatly expanded universe of "virtual" competency centers. Resellers, systems integrators (SIs) and "self-implementing" end-users can tap into activeAnswers for content, knowledge and solutions to help them break through the barriers to rapid NT solution deployment.

Compaq pledges that activeAnswers will help resellers, VARs and SIs go "beyond the box" and develop more solutions-oriented, higher-margin businesses. It estimates that 40 percent of its resellers already do some form of needs analysis for their customers and contends that activeAnswers will help them speed up this curve, win more often, win more quickly and with greater profitability.

Looking ahead, Compaq plans to follow an aggressive timetable for adding industry-leading solutions to activeAnswers. Solutions will be selected to address the needs of small, mid-size and large customers and to expand activeAnswers' portfolio in Compaq's targeted markets during the next few months. And, once it covers most of the major horizontal solution bases, Compaq is likely to provide activeAnswers for its three vertical target markets: communications, finance and manufacturing.

From a total universe of about 40,000 potential activeAnswers solutions, Compaq estimates that only two to three dozen are actually tier-one, high-volume solutions. Compaq is collaborating with most of these ISVs to provide in-depth activeAnswers solutionware.

Beyond 1998, Compaq intends to grow activeAnswers at warp speed in terms of solutions and subscribers. It simply can't — even with the acquisition of 23,000 people from Digital Services — grow fast enough internally to satisfy the demand for replicable, packaged, volume solutions deployment.

Compaq faces competitive pressures in its NT solutions quest, as other vendors vie to break its hold on the NT server market with their own programs to speed NT time-to-solution. For instance, IBM offers its new ServerProven program through its Solution Partnership Centers (SPCs), where it jointly tests, optimizes and documents NT Server solutions on its Netfinity servers. IBM provides resellers and customers free online access to these solutions.

Most other NT vendors (including IBM, HP and Compaq) continue to push preconfigured solution bundles into the market. HP, for instance, rolled out Realize Rapid Returns, tailored for small and midsize companies. It offers fixed-price, prepackaged SAP R/3 systems with guaranteed installa-

tion in 10 to 16 weeks.


When possible, vendors will also increasingly take advantage of more direct sales and support models to cut time-to-solution. Data General offers "in-a-box" packaging for Microsoft Cluster Server, Exchange Server and Terminal Server.

Dell Computer has the most potential to upset the NT server solution apple cart. In May, Dell introduced ExchangeMatch, a free software tool that matches customers' Microsoft Exchange Server workloads to appropriate PowerEdge server configurations. ExchangeMatch is designed to help customers reduce purchasing guesswork and better project costs associated with configuring and implementing Exchange. Once the Exchange solution is configured, ExchangeMatch connects the customer's Web browser directly to Dell's online store.

To expand activeAnswers beyond tier-one applications, Compaq is developing common sizing frameworks and other templates for the much larger group of second-tier applications vendors. These developers will use these frameworks and templates to create sizing, configuration and other tools that conform to Compaq's activeAnswers methodology.

Compaq estimates it has about 75 activeAnswers channel partners now and it expects to enlist 500 by the end of 1998. As activeAnswers membership increases, Compaq will likely end up with a tiered reseller program, analogous to Novell's Platinum, Gold and Silver models.

—Excerpted from "Compaq: Formula One for NT Server Solutions," a Summit Strategies (Boston, Mass.) Market Strategy Report (October 1998).



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DATA**WAREHOUSING**

Your Data Warehouse: A Marketing Information Solution?

Ask And You Shall Receive. Well, Maybe. Maybe Not.

Diane Stuckey

Many companies long ago decided that consolidating their information resources within a data warehouse was the best way to meet their present and future information needs. The benefits of integrating information from disparate sources into a single repository were just too appealing to resist. For the marketing organizations in these companies, having a single source from which to draw customer data was a dream come true.

For the first time, marketers would have access to the data they needed to target specific customers with narrowly focused messages as opposed to the broad, mass marketing approaches of the past. They would be able to identify a company's best (i.e., most profitable) customers and address those customers as individuals. By using customer data more intelligently, organizations would be able to increase sales productivity, improve customer service and increase per-customer revenue and profit.

As more data warehouses come online, marketing organizations are finding that the typical data warehouse may not meet their needs. For a data warehouse to address questions about the profitability of a business, it must usually consider *every product, channel and customer*, as well as a host of other factors.

Therefore, data warehouses designed to answer profitability questions are among the largest and most granular. Although summarizing the data can make it more accessible, summarization can inhibit a user's ability to answer ad-hoc questions. In order to summarize, you must know the questions you want answered as the data warehouse is being implemented.

Question Obsolescence

Of course, users of marketing information systems can never predict in advance all the questions they might ask of the data. Factors such as new products or competitors, changes in government regulations and shifting corporate identities and missions render existing questions obsolete even as they suggest new ones.

The size and structure of a data warehouse can also limit its usefulness as a marketing information system. Data warehouses are designed to take large volumes of disparate transactional data and do a few specialized things to it repetitively and efficiently, processing it into a consistent framework. Such systems are usually organized in a sequential, "flat file" environment. These large, transactional systems cannot afford to have too many users. Therefore, many marketing organizations are turning to "data marts" and "data mining" as a way to provide the customized informa-

tion they seek.

Data marts and data mining work like Decision Support Systems (DSS) environments in which different questions are asked of the data to support decision-making processes. Therefore, DSS environments are more *relational*. Data is organized in such a way that it can efficiently accommodate changes in the decision-making process.

Cumbersome And Inefficient

Data warehouses are terribly inefficient and cumbersome when it comes to answering decision-support questions. By the time a traditional in-house accounting or operational system can provide a new marketing-oriented report, the opportunity the report was meant to seize may have passed. Relational data marts, on the other hand, are quite inefficient in processing large volumes of transactional data.

The good news, however, is that companies are not necessarily faced with an unpleasant, either-or decision as to whether they should build a data warehouse or more specialized data mart. In fact, the best approach may be to use their data warehouse as an intermediate storage point to distribute data to various data marts for specialized processing and decision support.

One important advantage to this approach is that the data warehouse can apply an enterprise model to the information it receives, reconciling or rationalizing data that is inconsistently recorded, defined or tracked in disparate systems. By cleansing and standardizing data, the data warehouse enables the data marts that use the information to provide meaningful and consistent answers.

Buy Or Build

The more difficult issue facing companies in terms of data warehousing and data marts is whether to develop the solutions themselves or outsource the chore to a marketing information specialist. The answer depends on two primary factors.

A Corporation's IT Organization.

Companies with strong IT organizations may have the resources and expertise to develop both the data warehouse and related data marts. Keeping development in-house allows greater control of the process, the data and the budget. However, developing marketing decision support and data mining systems is probably not the primary mission of most companies' IS organizations. Therefore, they may choose to outsource such development and keep their IS groups focused on the information needs of their core business.

The Relationship Of Marketing And IT.

Naturally, IT organizations are comfortable with the language of databases. They intuitively understand how to structure a large, data warehouse environment. However, IS organizations are usually less fluent in the language of marketing and not always aware of a marketing organization's unique information needs. Unless the marketing organization is intimately involved in the design of a marketing information system, the odds are that the system they receive from IS will be less than ideal.

If terms such as "customer acquisition," "customer share," "upsell" and "cross-sell" are foreign to the IT group, they should strongly consider outsourcing.

Long Term Storage

Beyond the decision of how the data warehouse and any related data marts will be developed lay decisions on how the systems will be maintained and modified and how the currency and integrity of the data will be assured. In all these decisions, the

organization's culture in regards to openness to change, aversion to risk and commitment to long range goals plays a critical role. When a data warehouse project fails, *politics, not technology*, is usually the cause.

That's because developing a data warehouse or a marketing information data mart is a long-term commit-

Consultants On A Role?

Consultant Should BePercent

Database Designer51%
Technical Architect46%
Methodologist43%
Requirements Analyst35%

Consultant Should Never Be ..Percent

Project Manager32%
Data Warehouse "Evangelist" ..	.27%
Data Administrator24%
Database Administrator21%

Source: Data Warehouse Institute

ment. Although the payoffs in terms of selling efficiency, customer retention, profitability and market penetration can be tremendous, they won't be realized overnight. Any information solution implemented requires tinkering as it is put to use and tested in the real world.

Although marketing and sales information systems address areas critical to a company's success, they tend to provide the quickest return on investment. Despite the challenges in developing data warehouses and data marts, when implemented properly, the strong competitive advantage they provide will be felt in every area of a company's operation.

—Diane Stuckey is Vice President of
Strategic Marketing, IntelliQuest
Marketing Information Solutions
(Austin, Texas).

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Y2K Is OK For HP3KS-38

Is your HP 3000 up to date? The Year 2000 date that is. MPE/iX 5.5 Express 4 or MPE/iX 6.0 can take your HP 3000 over the millennium hurdle.

Product BriefS-39

MK Group's
ManMan/Insight

Interoperability ImplementationsS-40

What do you need to consider before choosing the right interoperability path for your network? Are you replacing, transitioning or integrating?



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HP 3000 SOLUTIONS

Y2K IS OK FOR HP3K

In the spirit of the season, I'm required to proclaim the good news to HP 3000 users regarding the Year 2000. In that regard, I had the opportunity to speak with Kriss Rant, HP 3000 software product manager, who says that HP's CSY were pioneers in the effort to bring Y2K compliance within HP. But sometimes, as we all know, there are those arrows ...

Rant took the time to point out that more than a year ago, "a Year 2000 video conference broadcast, attended by more than 1,000, showed how on top of things HP 3000 customers were at the time." And by the time 1997 was over, MPE/iX 5.5 Express 4 was announced as Y2K-compliant. However, by 1998 there was "pressure" as Rant put it, from all of HP computer customers about the Y2K Problem.

Eventually, Lew Platt, HP's CEO, formalized an official program and office to manage all of HP's Y2K plans; that included a set of formalized test standards. The additional testing revealed a few problems. Those minor problems have since been fixed with twelve additional software patches. So, although MPE/iX 5.5 Express 4 is the basic requirement for Y2K-compliance for HP3000 customers, they should check the jazz.external.hp.com Web site to ensure that they have the additional patches they may need for their particular requirements.

Those patches, of course, have been rolled into MPE/iX 6.0, the current version of the operating system, which began shipping to customer in late October of this year. Although, according to Rant, 6.0 "is not a requirement for Y2K compliance." Both MPE/iX 5.5 Express 4 and MPE/iX 6.0 are Y2K-compliant and will be supported through the Year 2000. Rant estimates that at least 50 percent of the HP 3000 installed base has moved to MPE 5.5 Express 4. "We were pleasantly surprised that our customer request rate for 5.5 exceeded our expectations." That's important because anything earlier than MPE/iX 5.5 is not Y2K-compliant, nor will they be, says Rant. "Those customers will have to upgrade to 5.5 Express 4 plus the patches."

HP 3000 users, and for that matter, all HP computer users concerned with Y2K issues should also understand HP's definition of Y2K compliance which led to the additional aforementioned testing standards. You can read it at www.hp.com/year2000/compliance.html. According to the research firm, the Aberdeen Group (Boston, Mass.), it's a rigorous standard that goes beyond the industry's most stringent requirements.

Y2K hardware compliance is more difficult, says Rant. "Customers have to rely on the reputation of the vendor. There were no issues with PA-RISC hardware and all the firmware checked out." That covers all HP 3000 hardware — except the 925, 935 and 949 — which have been discontinued. HP has special trade-in credits for those systems.

No matter how you look at it, the Y2K has been a boon for the HP 3000. "Many of our customers who thought they were going to replace their applications, are now fixing them. So, hardware upgrades, which were put on hold, are now going forward. We saw a huge increase in revenue for the platform." Other areas of growth have occurred where customers are replacing other vendor's platforms with new Y2K-compliant applications on the HP 3000, for example, Smith-Gardners' mail order and catalog application, MACS.

Rant sums up it all up this way: "CSY has been on top of the [Y2K] problem since mid-1996. The last thing that I want to happen is to have the HP 3000 disrupt our customers' business because we didn't do what we should have."

George A. Thompson
Editor-in-Chief

Insight Takes Flight

Product Briefs

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It used to be that a sales rep for Airshow, Inc., a Tustin, Calif.-based manufacturer of inflight information and entertainment systems, had to lug along a load of cumbersome and heavy demo equipment to show clients their products.

Now, with the inclusion of Insight as the Web-based front-end for the MK Group's popular ManMan/HP application, all they need is a laptop and a modem. With Insight, they can offer multimedia access to ManMan's database.

"Insight provides a link to

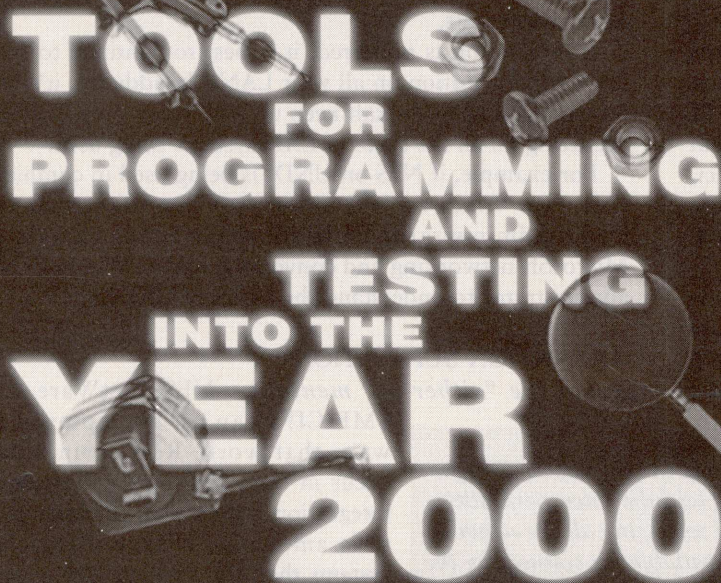
[ManMan's Order Management/Accounts Receivable component] OMAR," says Joel Hansma, Airshow's IS manager. That link then lets Airshow representatives show product videos, place orders, or check inventory and order status over the Web instead of "carrying a ton of equipment with them."

ManMan/Insight uses Computer Associate's (CA; MK Group's parent company) Opal, a Windows-based multimedia authoring and application integration environment that creates multimedia graphical user interfaces for mainframe and host-based

systems.

Airshow acted as a primary beta site for Insight. "We helped with things we thought were important that weren't in the original beta," says Hansma. Airshow's testers felt encumbered by switching back and forth from the mouse to keyboard to enter orders. Hansma and his staff convinced the developers to allow for data entry with either a mouse click or the enter key.

"We helped with the logical sequencing to really speed up the product," he says. "And, the bottom line is, that's made it much faster to enter a sales order."



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Interoperability Implementations

Know The LANscape Before You Begin

Dave Herbert

Product Marketing Manager, WRQ, Inc.

Now that you know the various networking protocols — HP Resource Sharing, NFS, NCP and SMB — you can begin thinking about choosing which one is best suited for your particular HP 3000 interoperability project. Before you start, you need to answer the following question: Are you replacing, transitioning or integrating?

In other words, what will actually be taking place on the network? Many LANs have a history of changing without any clear reasons. In many of my conversations with IT managers, we begin by talking about replacing systems, but the replacement is done on a fairly long timeline. In fact, the replacement process can be several years. In these cases, the network is really in transition, meaning multiple systems will be online simultaneously.

Over time, the older LAN system will decrease (servers will gradually be turned off) and the newer will increase (new servers and clients will be added). This could mean a fairly lengthy time when both networks will be serving the needs of users. As a result, another series of questions arise. Do the overlapping systems need to integrate through the time of transition? Is it possible or even necessary for file and printer resources to be shared across LANs during the transition?

When transition is going to happen, it's helpful to consider using inexpensive integration solutions through the

transition. On the other hand, it may be best for your organization to continue to use systems that are currently running. For example, HP 9000 systems with NFS networking will remain in use indefinitely, but new Windows NT servers will be added over time. In this circumstance, integration tools are much more important and worthy of long term investments.

If integration is preferred, it is best to continue to staff LAN administration on all your LANs. In addition, it's recommended that your staff keep up with technology changes occurring on all the types of LAN systems being used.

For example, if NFS on UNIX is being used in combination with Windows NT servers, it's important that the UNIX administrator understand the fundamentals of Microsoft networking and conversely, for the Windows NT administrator to understand the basics of UNIX.

TRANSITION SUPPOSITIONS

Avoid the "either-or" mentality. NFS, NetWare and SMB/CIFS can all be deployed in ways that work. Real savings can occur in time and money if effective integration occurs with the least possible amount of change. Replacing systems that are working well is very expensive. The saying "If it ain't broke, don't fix it" is extremely important when trying to integrate LANs.

Editor's Note: In November, WRQ's Dave Herbert laid the interoperability groundwork by reviewing all the networking protocols available for connecting the HP 3000 to UNIX and LAN platforms. This month, in this second and final part, you'll learn how to implement them.

Avoid proprietary and/or single-vendor dependent solutions. For example, HP Resource Sharing has been useful in the past on HP 3000s, but not a good solution for UNIX and Windows NT because it is not widely accepted, understood, or supported in the networking community. I know some readers of this article know about Resource Sharing, but overall, few use it or understand it. HP developed it but it has not been carried beyond the HP 3000, pointing to the feared result of using a closed LAN model.

Leverage the LAN majority. Determine what current LAN system has the greatest presence on the network and use it to gauge the changes that will occur. Because the LAN services the majority of end users, anything you do has the potential to impact this major part of your network. The transition has greater potential to be smooth if the LAN majority is kept as stable as possible.

Determine what the primary platform of administration will be. Going forward, determine what is the strategically best platform to use for the majority of management of the integrated network. For example, if the LAN majority is UNIX, it may be most beneficial long-term to choose solutions that are best managed in UNIX. If the LAN majority is on a Microsoft Network with NT servers and the majority of system administration is done on the Microsoft Network, then it would be better to implement solutions that focus on the Windows NT server.

Look at the impact a LAN change will have on hardware and operating system costs. Changes inevitably cause hardware and operating system upgrades or replacements. This may have huge financial implications for your company. The cost factor may influence several of the issues already mentioned. Cost can impact the number of new file servers put online during a transition. The rate at which file servers can be added will determine the number of end-users serviced by the new solution and could ultimately determine the rate of transition.

INTEGRATION SCENARIO

Let's say your network consists of a HP 3000, a HP 9000 (running NFS to provide file and print services for Apollo workstations) and several Windows NT servers. None of the LAN systems currently interact. And for whatever reasons, your company does not want to invest much money in additional hardware and software for the HP 3000, so you need an integration solution.

HP 3000 files are shared with users via file transfer to Windows PCs. The Windows NT servers provide file and print services to Microsoft networked PCs. Because the bulk of the user activity on the network revolves around Windows-based business productivity software, the LAN majority is running Microsoft protocols. Therefore, you've determined that Microsoft networking administration is to be the focus of the integration plan.

An application resides on the HP 3000, but is only needed by a small number of users who access it through termi-

nal emulation software. The application produces data files that need to be accessed by the Windows desktops and put into spreadsheets. The HP 9000 is being used by a group of engineers running on a mix of Windows desktops and UNIX workstations. The UNIX workstations store data files on the HP 9000.

SAMBA STEPS

The SMB protocol can be installed on the HP 3000 using *Samba/iX*. With minimal software cost (*Samba/iX* is free-ware), the anticipated IT expenditure will be administration of and training on SMB networking on the HP 3000. Samba servers must still be administered in the same way the host is managed. For more on *Samba/iX*, see "Doing The Samba On The HP 3000" in the October issue of *HP Professional*.

But note, while *Samba/iX* provides Microsoft networking for various platforms, it doesn't magically change those platforms into Windows NT server consoles. As a result of installing *Samba/iX*, Windows users will have direct LAN access to both Windows NT servers and the HP 3000. Because access is somewhat transparent (*Samba/iX* looks and acts like a Windows NT server on the network), the impact is minimal on the desktop PC users.

The Windows NT servers are used to administrate this LAN and the HP 3000 participates as a server within an NT domain. So, the HP 3000 administrator has to understand something about Microsoft networking. And the Microsoft networking administrator should understand something about the HP 3000.

An NFS gateway might be installed on the Windows NT server. No SMB networking is installed on either the UNIX server or the workstations. Because the administrative focus is on Microsoft networking and Windows NT Server, the UNIX file service integration would be best done from Windows NT. UNIX workstations store their data on the HP 9000 server, so they do not need access to file resources on the Windows NT servers or the HP 3000. As a result, NFS continues to provide a good solution for them.

The rest of the Windows desktops in this engineering group need access to the Microsoft network and some limited access to the HP 9000 file services. An NFS gateway on Windows NT is the best way to do this because it allows the management and control of file access to the HP 9000 server through the Windows NT server.

SMB/CIFS networking could have been installed on the HP9000, but it would have involved costly hardware and software upgrades to the UNIX server and make control of access more complicated. The Windows NT administrator then also needs to know something about NFS and UNIX networking.

Correspondingly, the UNIX administrator does not need to know about Microsoft networking. Rather, this person needs to know how an NFS gateway integrates with Windows NT and UNIX user accounts. ♦

For complete vendor contact information, go to

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APPLICATIONS DEVELOPMENT

Research Systems' IDL 5.2

IDL (Interactive Data Language) 5.2 features IDL GUIBuilder which lets users build customized GUIs in a drag-and-drop environment and generate platform independent code. Any interface developed with IDL GUIBuilder is portable to any system running IDL 5.2.

It supports new data formats including Hierarchical Data Format-Earth Observation System (HDF-EOS) and Digital Imaging Communications in Medicine (DICOM) and 64-bit files for files larger than 2GB.

IDL 5.2 for Windows 95/98/NT, Mac OS and Linux is \$1,500 until January 1, 1999, then \$1,895. HP-UX, IRIX, Digital UNIX, AIX and OpenVMS start at \$3,495.

Contact Research Systems, Inc., Boulder, CO at (303) 786-9900.

Energizer PME For SAP R/3

OptiSystems Inc. has announced Energizer PME for R/3, a performance management solution for SAP R/3. It includes: Optitrak - identifies R/3 problems as they happen and analyzes most likely causes of response degradation; Optiwatch - reconfigures the R/3, database and operating system parameters to their optimum settings; Optigrowth - provides service level definition and reporting and capacity planning to ensure the management of system activity and growth; and Optimanage - performs dynamic performance management of R/3 to improve performance and balance workload.

OptiTrak, the first component, starts at \$57,500 for 100 users.

Contact OptiSystems, Inc., Naples FL at (800) 447-3336.

Informix Adds To Linux

Informix Corporation announced three additions to its Linux portfolio: Informix Dynamic Server on Linux; Informix-SE on Red Hat Linux; and Informix Dynamic 4GL on Linux.

Dynamic Server on Linux is designed

to support Web integration. It enables developers to build e-commerce and Internet applications with "how-to" scripts that document integration with Apache Web server. Informix Dynamic 4GL on Linux allows developers to transform character-based INFORMIX-4GL applications into GUI-based, "thin" client-server applications through a recompile. Informix-SE on Red Hat Linux is a database engine for small-to-medium applications that supports the multi-threaded (glibc) libraries of Red Hat.

Contact Informix Corp., Menlo Park, CA at (650) 926-6300.

DATA WAREHOUSING

Meta Exchange 1.0

Meta Exchange software allows enterprises to exchange, synchronize, view and manage both technical and business metadata across heterogeneous technologies in distributed environments. It enables all vendors' products throughout the enterprise to exchange metadata—regardless of technology differences—while maintaining the metadata's complete integrity; without the use of a centralized repository.

Version 1.0 includes the MDIS interchange format. Version 1.1 will include CDIF (Common Data Interchange Format) and an interface for OIM (Open Information Model). Exchange Manager is priced at \$49,900 for a two-user license and runs on Solaris, HP-UX, AIX and Digital UNIX.

Contact Pine Cone Systems, Inc., Englewood, CO at (303) 221-4000.

DESKTOPS AND SERVERS

Lantronix Thin Server

Lantronix's new Fast Ethernet thin server puts "thinking" things on networks, including telephone and security systems, heating and ventilation control units, spectrometers and blood analyzers. It offers a single port to connect digital devices to an Ethernet network.

It provides serial-to-Ethernet conversion for 10Mbps Ethernet and 100Mbps Fast Ethernet by incorporating a 10/100 RJ45 Ethernet interface with autosensing

and autonegotiating. Serial devices can be managed using TCP/IP over Ethernet, replacing dedicated PCs with a lower cost server that transfers management and control to a local network or World Wide Web connection.

Contact Lantronix, Irvine, CA at (949) 453-3990.

256MB and 512MB Modules

Camminton Corp. has introduced 256MB and 512MB PC1000 registered DIMMs designed for Intel's new 440GX chip set. They are built with 128Mbit or 256Mbit stacked SDRAM chips to support high densities while maintaining compliance to PC100 mechanical specifications.

The high density modules are intended for high-end workstations and servers such as the HP Kayak XU/440GX and XW/440GX. Current shipping configurations are 32Mx72 and 64Mx72 respectively. The 128Mbit SDRAM stacks are built with standard 64Mbit SDRAM while the 256Mbit SDRAM stacks are built with brand new 128Mbit SDRAM chips.

Contact Camminton Corp., Irvine, CA at (949) 454-1500.

168-pin EDO DIMM

Clearpoint Enterprises' new CPSM 66M and 72M are 66-bit wide and 72-bit wide dual-bank memory modules designed to boost the power of systems which require a 168-pin DIMM form factor.

Combined with other members of Clearpoint's product family, the new modules can provide any combination of single and dual-bank upgrades for low voltage and EDO as well as Fast Page Mode workstation memory applications.

Contact Clearpoint Enterprises, Inc., Milford, MA at (800) 253-2778.

DISASTER RECOVERY AND SECURITY

Sysix Aligns With Comdisco

Sysix Technologies, a HP system integrator, has joined an alliance with Comdisco to provide disaster recovery services to clients nationwide. The partnership will bring together Sysix's ERP and data warehousing expertise with Comdisco's Business Continuity Services to offer clients a comprehensive systems/disaster recovery solution.

Contact Sysix Technologies, Chicago, IL at (773) 693-3910.

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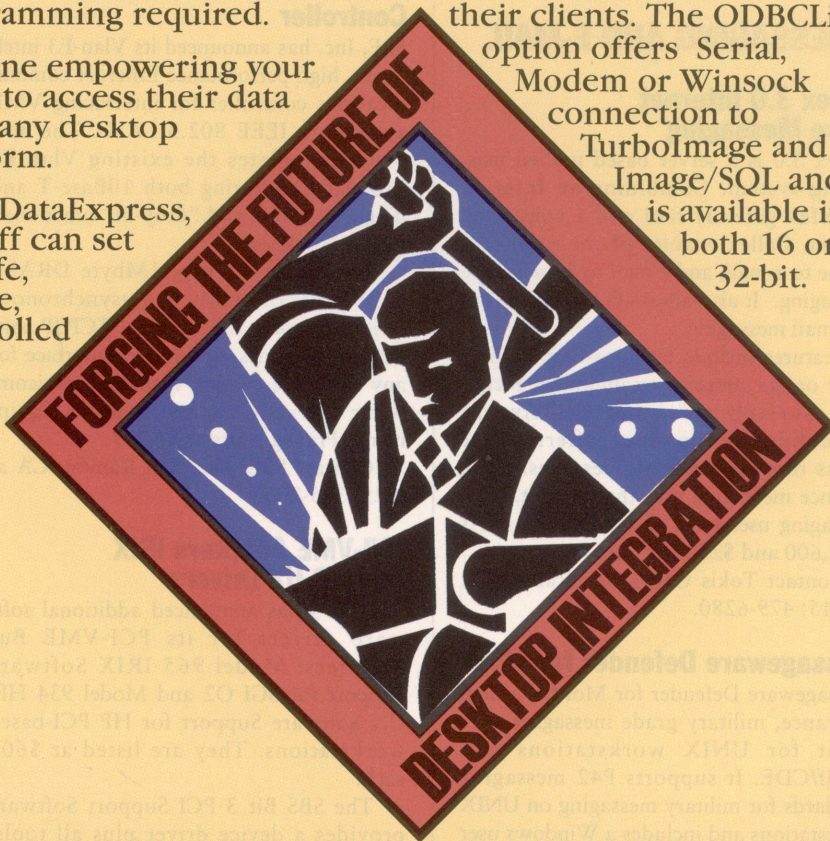
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M. B. Foster Associates' ODBCLink/SE was chosen by Hewlett-Packard as the best solution available for their clients. The ODBCLink option offers Serial, Modem or Winsock connection to TurboImage and Image/SQL and is available in both 16 or 32-bit.



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IntraGuard Firewall

Compatible Systems Corp.'s standalone firewall supports VPNs and provides pre-loaded security policies for mid-size and branch office networks. It offers a choice between turnkey operation and full administrator control. Zero-configuration allows managers to implement a security policy by plugging the unit in and turning it on. A secure embedded operating system eliminates the security-related patches, installation requirements and performance flaws of general-purpose firewalls.

It is equipped with three 10/100 Mbps Ethernet interfaces supporting inside, outside and "DMZ" segments, uses stateful inspection/blocking and multiple logging levels by IP address or host names. It is \$3,995.

Contact Compatible Systems Corp., Boulder, CO at (800) 356-0283.

MESSAGING AND E-MAIL

Callex 3.0 Internet Voice Messaging

Callex 3.0 is a server based unified messaging system. Combining an Internet voice/fax gateway tool and a voice mail system, Callex enables phone to phone, phone to e-mail, and e-mail to e-mail voice messaging. It also allows fax to fax or fax to e-mail messaging.

Features include broadcasting a single voice or fax message to unlimited recipients, auto reply and message delivery time scheduling. The mailbox offers phone access to voice and fax messages. Long distance messaging uses the Internet, local messaging uses local phone lines. It starts at \$3,600 and \$250 per line.

Contact Tokis Corp., San Rafael, CA at (415) 479-6280.

Messageware Defender for Motif

Messageware Defender for Motif is a high assurance, military grade messaging user agent for UNIX workstations and Motif/CDE. It supports P42 messaging standards for military messaging on UNIX workstations and includes a Windows user interface. A modular security architecture allows organizations to plug in different security libraries such as Fortezza MSP3, Fortezza MSP4, S/MIME and CASM.

It features ACP 123 and ACP 120 compliance, allowing for military encryption and signature capabilities, requests for and processing of signed receipts and handling of both hardware and software tokens. It's available for HP-UX and Solaris and is priced at \$110 per seat.

Contact Nexor, Inc., Gaithersburg, MD at (301) 258-7000.

NETWORK INTEGRATION

TotalNet Advanced Server 5.4

TotalNet Advanced Server (TAS) 5.4 integrates NT, Netware, Macintosh and UNIX servers so that all users can access data from their platform of choice.

TAS 5.4 can operate as the only server on an NT network, offering the Syntax primary domain controller (SPDC), NT logon and NT access control lists services. It can also replace NFS products for PCs, without having to maintain the software on each PC. One TAS server can act as a SPDC for NT users, while others can trust an existing Microsoft PDC and others can use NIS or NIS+ for client logon.

Contact Syntax, Inc., Federal Way, WA at (253) 838-2626.

Vlan-E3 Communications Controller

SBE, Inc. has announced its Vlan-E3 intelligent, high-performance Ethernet communications controller for interfacing VME systems to IEEE 802.3 LANs. The new product updates the existing Vlan-E2 product by offering both 10Base-T and diagnostic ports and "drop-in" functionality for upgrades.

The board features 1Mbyte DRAM, 512Kbytes EPROM, two asynchronous serial I/O ports and optional TCP/IP software. It provides an Ethernet interface for any 6U VME system, including minicomputer and data communications equipment. Pricing starts at \$1,299.

Contact SBE, Inc., San Ramon, CA at (925) 355-2000.

PVI-VME Adapters IRIX and HP-UX Drivers

SBS Bit 3 has announced additional software drivers for its PCI-VME Bus Adapters: Model 965 IRIX Software Support for SGI O2 and Model 934 HP-UX Software Support for HP PCI-based workstations. They are listed at \$600 each.

The SBS Bit 3 PCI Support Software provides a device driver plus all tools, including memory mapping, required to access and control remote bus devices for HP-UX applications using Model 934 software and SGI applications using Model 965 software. These programs function with SBS Bit 3's Model 617 high performance PCI-VME adapter and their Model 616 low cost PCI-VME adapter.

Contact SBS Bit 3 Operations, St. Paul, MN at (612) 905-4700.

HOBLINK J-Term

HOBLINK J-Term is Web-to-host software that offers a Java solution for 3270, 5250 and VT525 emulation. Designed to run on any computer with a Java virtual machine, HOBLINK J-term is completely written in Java and allows the printing of IBM host data from the Java applet via the World Wide Web.

Host connection is possible from any Java-capable computer connected to the Internet. No additional software needs to be installed and the only entry that needs to be made is the Web address (URL) of the web-page that contains HOBLINK J-Term. It sells for \$1790 for a 10-user license.

Contact HOB Electronic GmbH & Co, Dallas, TX at (214) 521-8599.

PowerTerm CE

PowerTerm CE for Microsoft's Windows CE is an addition to Ericom's series of terminal emulators for the DOS, OS/2 and Windows. It enables handheld PC users to connect to applications running on UNIX, Digital and IBM hosts. The PowerTerm series supports Digital, WYSE, IBM, DG and other terminal emulations. The full PowerTerm CE product is provided in one executable file of less than 1 MB. Among the product's features are customizable function keys, scalable screen view, multiple concurrent sessions and history scroll bar.

PowerTerm CE (RISC MIPS/SH-3) sells for \$99.

Contact Ericom Software, Inc., Hackensack, NJ (201) 525-5511.

PRINTERS

DocuPrint 65 and DocuTech 65 Publisher

Xerox's two new 65 ppm printers share the same print engine and the same controller/software, the Xerox Document Services Platform (DocuSP), for a common foundation that permits the two models to interchange capabilities.

DocuSP runs on a 250MHz Sun SPARC Ultra and provides raster image processing of Adobe PostScript Level 2 files. Both printers come with Variable-Data Intelligent PostScript PrintWare that combines image, PostScript and ASCII or EBCDIC line data streams for printing at the printer. The DocuPrint 65 costs \$49,800; and the DocuTech 65 with DigiPath Production Software is \$75,000.

Contact Xerox Corp., Fairport, NY at (800) ASK-XEROX. ♦

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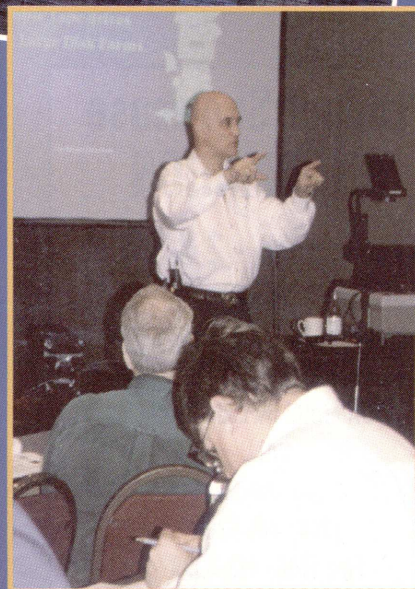
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APPLICATION DEVELOPMENT

JetSend Takes Flight

HP has announced an application of its JetSend protocol for mobile devices, including personal digital assistants, digital cameras, handheld PCs and cell phones. HP will offer an appliance development kit (ADK) for this new mobile application.

The development kit is expected to reduce the time to integrate JetSend into a product by more than 50 percent, compared to the time to use the JetSend specification alone. JetSend-enabled devices can exchange data with other JetSend-enabled devices, regardless of manufacturer. While designed primarily for infrared (IR) connectivity, this new JetSend mobile application is based on the same JetSend software already installed in more than 2 million JetSend-enabled solutions.

url: www.jetsend.hp.com

NETWORK MANAGEMENT

OpenView NetMetrix Management

OpenView NetMetrix Site Manager for Windows NT is a network-performance monitoring and analysis solution optimized for small to medium-sized corporate networks and remote sites within larger enterprises. It interoperates with embedded remote monitoring (RMON) capabilities in a range of network devices, giving network managers the detail necessary to trouble-shoot network segments quickly and identify network-performance trends.

It can discover all RMON and RMON2 devices automatically and provide detailed information to network managers. It takes less than an hour to deploy and configure and can be launched from HP OpenView Network Node Manager for Windows NT.

HP OpenView NetMetrix Site Manager for Windows NT is \$5,745. Existing HP OpenView NetMetrix/Win customers that participate in the software subscription service will receive Site Manager at no additional cost.

url: www.hp.com/go/netmetrix

Call Center Management

Version 5 of the HP Customer Contact Manager (CCM) advanced computer-telephony integration (CTI) software enables call centers to manage customer interactions across multimedia contact channels such as voice, the Web and e-mail. The feature set includes: next-generation outbound dialing with inbound blending; advanced virtual-call-center capability extensions; support for Microsoft Windows NT Server; and enhanced scalability and performance.

The HP CCM Smart Dialer Suite provides the ability to implement blended inbound and outbound environments. Customers can select from: Smart Preview Dialer — allows agents to review customer information prior to call; Smart Progressive Dialer — adds automatic call progress detection; Dialer Channel Manager — allows leading predictive dialer vendors to integrate their products with HP CCM.

url: www.hp.com/go/smartcontact

SERVICES

Cure For Medical Supplies

HP's new online medical supply ordering system, currently available in the United States, will streamline the ordering and fulfillment process for more than 600 medical supplies. HP also said that it intends to offer Web-based medical-equipment support services beginning in early 1999.

The site allows HP customers to browse a comprehensive catalog of medical supplies. Customers register at the Web site to place orders online through a secure server.

url: www.hp.com/go/medsupplies

Gaining RapidValue

Prime Response Inc. and HP have announced RapidVALUE, a customer-relationship-management (CRM) solution for brokerages and mutual fund companies. RapidVALUE addresses the critical issues of firms with escalating customer-management challenges and the task of growing assets under management.

Prime Response and HP can deploy RapidVALUE in as few as 90 days. It packages the Prime Vantage campaign-management application with industry-specific methodologies, marketing consulting services, a preconfigured data model and UNIX or Windows NT systems from HP. As a result, a company concentrates on its most profitable customer relationships — planning, analyzing, executing and tracking its communication strategies across multiple channels, as well as maximizing broker/dealers' relationships with customers.

url: www.hp.com/go/rapidvalue

WORKSTATIONS

Multi-display Kayak

Based on the HP Kayak XA-s equipped with the Productiva G100-Quad graphics card, it supports up to four monitors in a single-PCI-slot graphics board. With 16MB of video memory, it provides 2-D performance and business-class 3-D graphics. A high-speed 230MHz RAMDAC ensures flicker-free displays and supports true 24-bit color at 1,280 x 1,024 pixels per channel.

The Workstation, with a 450MHz Pentium II processor, a Matrox Productiva G100-Quad multimonitor graphics card, 128MB ECC RAM and a 9.1GB/7,200 rpm wide UltraSCSI hard-disk is an estimated street price of \$3,638. The Matrox Productiva G100-Quad graphics card will be available on the HP Kayak XU Xeon PC Workstation upon request.

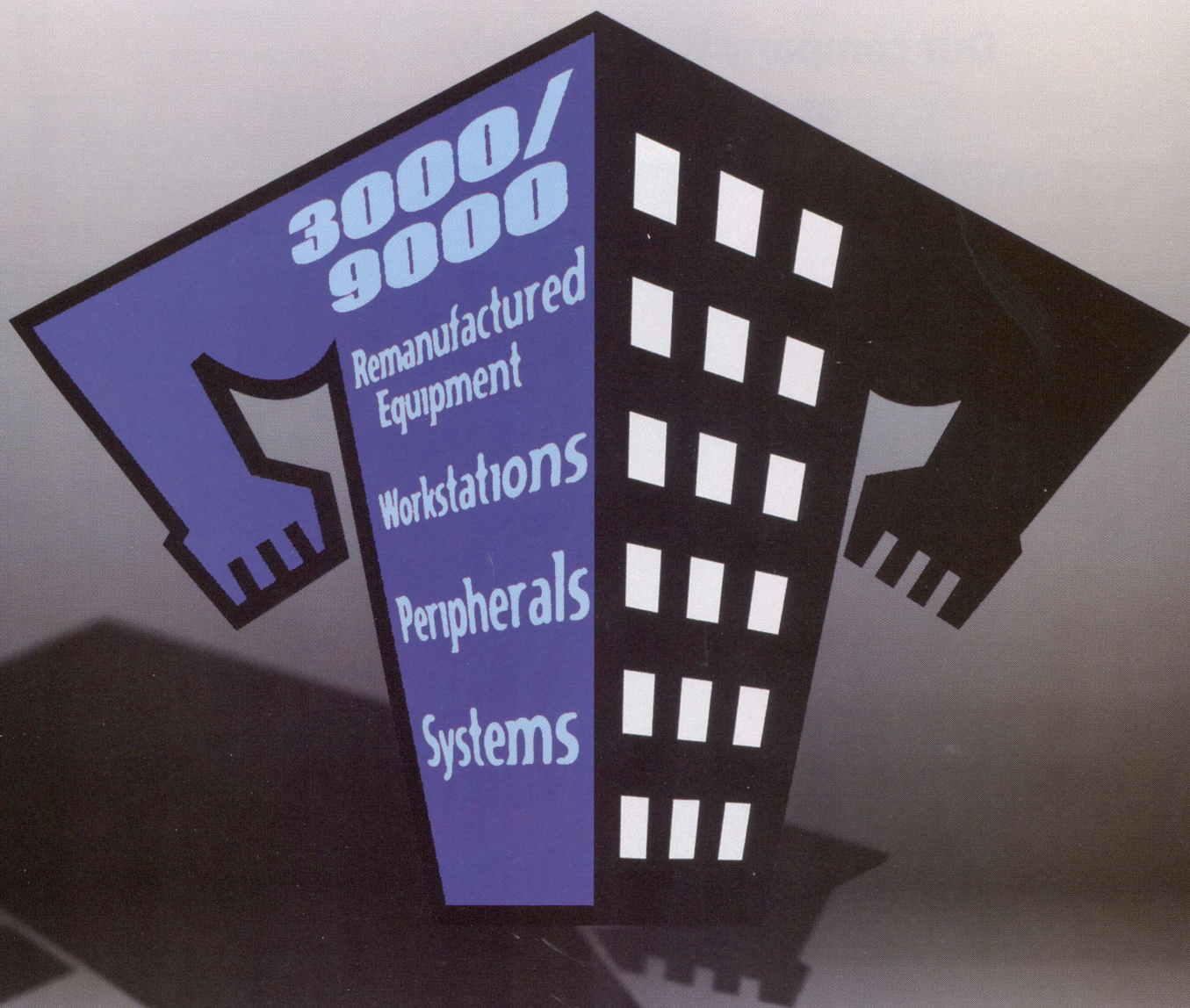
Jornada Handheld PC

The Jornada 820 Handheld PC is the first handheld PC to run Microsoft Windows CE, Handheld PC Professional Edition software. It sells for \$999.

It weighs 2.5 pounds and offers a touch-typeable keyboard with added solutions that provide: access to e-mail, corporate data and the Internet; note taking; faxing; color printing; and schedule planning. Outside In from Inso Corporation allows WYSIWYG viewing of 35 file formats.

url: www.hp.com/jornada

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